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ABSTRACT

Project Employment Assistance and Skill Enhancement (EASE II) was an on-the-job literacy and basic skills improvement project for employees of small companies in the metal working industry in the Chicago area. The goal of the project was to improve literacy skills, leading to the improvement of work force productivity targeted to disadvantaged workers. During the 21-month project, 10 literacy audits were conducted and curriculum modules were developed and refined for three subjects: workplace vocational English as a second language on three levels, prestatistical processing control mathematics, and training the trainer. A total of 801 prospective participants were recruited (46 percent above target); 307 new participants were assessed for workplace literacy skills (23 percent above the targeted number); 10 supervisor's training and orientation workshops were conducted; and 805 participants received instruction (46 percent above target). Based on the 310 students who were pre- and post-tested, gains on the Test of Adult Basic Education averaged 1.1 grade levels (12 percent) in reading and 3.5 grade levels (53 percent) in mathematics after only 36-48 instructional hours. A total of 12,894 contact hours were logged. The participants were 35.5 percent female and 64.5 percent male, with ethnic composition as follows: Asian (4.23 percent), Black (9.12 percent), Hispanic (32.25 percent), and White (54.4 percent). A third-party evaluation of the project documented the following reasons for the project's success: highly qualified key personnel and teaching faculty; a good staff development program; an innovative curriculum design, content, and effective instructional delivery; and a thoughtful management and partnership-building philosophy and practices. (A third party evaluation report developed during the project is included in this report.) (KC)

ED 387 679

EMPLOYEE ASSISTANCE AND SKILLS ENHANCEMENT

PROJECT EASE II

FINAL REPORT

[Reporting Period: November 1, 1993-July 31, 1995]

Submitted by:

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Office of Applied Innovations
Northern Illinois University

October 31, 1995

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PROJECT EMPLOYMENT ASSISTANCE AND SKILL ENHANCEMENT (EASE II)

FINAL REPORT

Introduction

This report covers EASE II operating period from November 1, 1993 through July 31, 1995, which included a three-month no-cost extension. The purpose of the report is to:

- document the accomplishments of the project;
- note the project's strengths and weaknesses; and,
- discuss significant programmatic insights and best practices, contributing to the overall body of knowledge in the field of workplace literacy.

The project worked with Ms. Jorie W. Philippi, the Third Party Evaluator to develop internal evaluation and data collection strategies, which included:

* pre-post testing, using the TABE and/or BEST;
* focus group meetings with supervisors from the targeted companies, to identify expected outcomes;
* Site visits;
* Individual Education Plan;
* Competency Checklist;
* Instructor's observation;
* Supervisor feedback;
* Planning Committee feedback; and
* Review of program files.

Accompanying this report is a document prepared by the Third Party Evaluator, which extensively addressing EASE II's quantifiable outcomes, distinctive features, findings and recommendations. As such, the internal final report will focus on filling in the gaps, in reference to programmatic insights and best practices, in hopes that other providers and the field as a whole can build upon our knowledge base.

Background

The need for workplace literacy training and the upskilling of the current workforce is urgent, as the United States of America strives to remain competitive in the world economy. Skill updating is imperative as high technology is being introduced to the workplace at a rapid pace, particularly in the precision metal industry. To address this problem head on, smaller precision metal companies represented by the project's business partners are at a distinct disadvantage because they lack the internal expertise, resources possess by large corporations. Characteristic of the industry is a small company size with an older workforce, where opportunity for advancement into the ranks of apprentice, and highly skilled positions, with high earning potential exists. However, the pool of metal workers has been declining.

Based on the problems identified by the partners, the EASE initiative began as a result of the cooperation between the Office of Applied Innovations and the Tooling and Manufacturing Association (TMA). EASE received was awarded its first grant cycle, from the National Workplace Literacy Partnership Program, beginning May 1, 1992 through October 31, 1993. The funding continued to cover services rendered during this reporting period.

The project's business partners included:

-Admiral Tool and Manufacturing Company
-Century Metal Spinning[*]
-Chicago White Metal Casting
-DieMasters Manufacturing, Inc.
-Dudek and Bock Spring Manufacturing Company
-Hudson Screw Machine Products Company
-Oxford Speaker Company
-Panduit
-Parkview Metal Products, Inc.
-Perfection Spring and Stamping
-Triton Industries
-Tru-Die, Inc.
-Wauconda Tool and Engineering Company, Inc.[*]
-Wireformers, Inc.

The goal of the project was to improve literacy skills leading to the improvement of workforce productivity targeted to the disadvantaged workforce, thus, equipping the workers with the necessary literacy skills to meet the challenge of America 2000.

The proposed objectives during the EASE II funding period were:

1. Conduct literacy audits and audit updates at new and continuing business partners between the first and end of the fifth month;

2. Develop and refine curriculum modules from the end of the third month to the end of the seventh month;

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[*] Because of major changes in personnel and workplace conditions, these partners did not participate after the project was funded. Instead, Fitch and Gerard, Inc., and FPM Company were added as instructional sites.

3. Conduct outreach and recruit at least 550 prospective participants from the second month to the end of the ninth month;

4. Conduct literacy skills assessment of at least 250 workers not assessed at continuing partner companies, from the second to the end of the ninth month;

5. Conduct at least 6 supervisor's training and orientation workshops for all partners from the third to the end of the 12th month;

6. Provide workplace literacy instruction to at least 550 participants from the fourth to the end of the 16th month;

7. Provide supportive services to all participants on an on-going and as needed basis; and,

8. Disseminate project information from the seventh month to the end of the project.

Proposed Objectives and Actual Accomplishments

The project successfully met or exceeded all proposed objectives within the proposed time-frames, with minor exceptions, as corroborated by the Third Party Evaluator's report.

In quantifiable terms, the project accomplished the following:

-Ten literacy audits, including audit updates were conducted;

-Curriculum modules which were developed and refined included:

- Workplace Vocational English As a Second Language (VESL): Beginning, Intermediate, and Advanced Levels;
- Pre Statistical Processing Control (SPC) Math; and
- Train the Trainer.

-801 prospective participants were recruited, exceeding the targeted number by 46%.

-307 new participants were assessed for workplace literacy skills, exceeding the proposed number by 23%.

-10 supervisor's training and orientation workshops/sessions were conducted at TMA, and at the specific job-sites in conjunction with recruitment events and meetings with internal education committees.

-805 participants received instruction, exceeding the proposed number by 46%. Of the 805 participants, 310 were newly recruited and had never been assessed. The remaining 550 were recruited during EASE I and were previously tested, although given limited resources, not all who were pre-tested during this phase received instruction. Approximately 52% were limited English proficient.

The originally proposed time-frame of providing instruction from the fourth month to the 16th month had to be extended slightly to the 18th month, thus, necessitating a three-month no cost extension, which was requested and approved. This was due to the two partners' unanticipated change in personnel and a two-month (December and January) production shut down.

Based on the 310 newly recruited students who were pre and post-tested, gains on the TABE averaged 1.1 grade levels, or 12%, in reading and 3.5 grade levels, or 53% in math after only 36-48 instructional hours. Gains on the BEST averaged 8.6 points, or 27%. A total of 12,894 contact hours were generated.

The composite average participant profile is as follows: White male, 37.4 years old, having completed nine years of education, employed in the precision metal industry for 5.8 years.[The demographic data is extensively reported in Ms. Philippi's report.]

The ethnic composition and gender of the 310 participants are as follow:

Asian	4.23%	Male	64.5%
Black	9.12%	Female	35.5%
Hispanic	32.25%		
Caucasian	54.40%		

-Because the partner companies were committed to providing at least 50% released time for classroom instruction at the job sites, the need for child care and transportation support was eliminated. Therefore, the only supportive services provided to students included educational counseling, periodic tutorial services and information and referrals. These services were customarily provided by the teaching faculty on an informal basis, before and after class hours.

-The project's dissemination activities included:

- Mailing of project abstract to all partners, at the beginning of the project.
- Inclusion of project description in the TMA newsletter during three different occasions. The newsletter reaches all TMA members, numbering over 2,000.
- Conducting two project information and orientation workshops, sponsored by TMA.
- Conducting three presentations at a statewide conference and a three-hour workshop at a regional event, sponsored by a USDE funded national project Linkage.
- Announcing project activities at three Leader's In Leadership Seminar Series attended by over 3,500 business and private sector representatives.
- Co-sponsoring an orientation and reception event introducing Dr. Reuven Feuerstein, his works and their relationship to workplace literacy. The event was attended by 45 participants.
- Responding to inquiries from other educational providers and businesses.
- Preparing and submitting three copies of the final report and products to USDE and the clearinghouses, as required.

Strengths and Weaknesses

The strengths of the project which contributed to its success are:

1. The highly qualified key personnel and teaching faculty*;
2. A programmatically sound and rigorous staff development program;
3. An innovative curriculum design, content, and effective instructional delivery; and,
4. A thoughtful management and partnership-building philosophy and practices.

These key components are further explained in the Best Practices section of the report.

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*No personnel changes occurred during EASE II operation.

The only major weakness is the lack of project's resources to engage in more rigorous experimental or quasi-experimental educational research which would have provided more definitive findings on the effects basic skills on learning and productivity. Further, since the project was not funded to conduct research, it did not produce adequate data which could be meaningfully used to calculate return on investment figures.

The project could be more effective in documenting supportive services which were informally provided to participants during EASE II. Finally, more time and effort, on the part of project staff, could be devoted to planning and working more closely with the Third Party Evaluator. Some of the data collection, relevant to objectives 5 and 7, were

left to the last minute and were not submitted to the Evaluator to be analyzed and included in her report.

Programmatic Insights and Best Practices

1. Qualified Key Personnel and Teaching Faculty

One of EASE II's cornerstone is its key personnel and teaching staff, consisted of a team of highly qualified and seasoned professionals who have a strong commitment to the field. They possess extensive experience and training in fields directly related to the objectives of the project.

Their expertise and credentials are summarized below:

Name/Title Educ. Background/Training	Experience related to objectives
T. Reed, Project Director Cultural and Linguistic Anthropology CAS; Secondary and Adult Education Fluent in seven languages	**16 years** -Grants and contracts management and supervision -Exemplary program designs and Education: ESL curriculum development -Staff development -Cross-cultural communications -Demonstration and dissemination -Partnership building and linkages -Integrated instructional services for the limited English proficient **8 years** -Workplace literacy for employed,underemployed

	and unemployed disadvantaged adults.
T. Mills, Project Manager BS; Sociology	**10 years** -Program management and coordination -Staff selection, development and supervision -Design and delivery of model programs in workplace education, employment and training -Private sector linkages -Marketing and public relations **11 years** -Personnel and Human Resources development, private sector
V. Hathaway, Curriculum and Staff Development Coordinator MA; Linguistics: Teaching ESL Fluent in Spanish	**16 years** -Curriculum development -Teacher training -Coordination of basic skills and ESL programs **9 years** -Staff recruitment, hiring and supervision **6 years** -Teaching ESL, workplace literacy, civics and culture
M. Dowd, Master Instructor/ Field Coordinator MA: Applied Linguistics Fluent in Spanish	**25 years** -Hiring, staff training, coordination and supervision -Literacy audits and company needs assessment -Workplace ESL instruction -Marketing and public relations -Bilingual education and instruction -Curriculum development
K. Conrad, Instructor MA; Curriculum Development BS; Business Administration	**3 years** -Workplace math and basic skills instruction -Curriculum development -Worksite program coordination -Actuarial services
J. Olthoff, Instructor MA; Special Education BA; English	**6 years** -Workplace math, ESL writing and basic skills instruction -Curriculum development for workplace and

	community programs -Literacy audits and assessments -Instruction, in-service training, and conference presentations 2 years -International language arts teacher, West Africa
J. Taylor, Instructor BA; Urban Studies	**6 years** -Workplace math, ESL and basic skills instruction -Curriculum development -Literacy audits -Student assessments

The Project Director and Manager, responsible for the oversight and the effective management of the project, both had a combined experience of more than 26 years in programmatic and fiscal management, staff supervision, training and evaluation. Both received training in Quality Circles, Participatory Management Strategies and Understanding ISO 9000 Certification. T. Reed and V. Hathaway were also trained in the Principle Centered Leadership lead by Dr. Steven Covey. Having worked for 11 years in human resources development for the manufacturing industry, T. Mills received extensive training in organizational development, industrial psychology, personal management, EEO/AAP laws and regulations, effective marketing strategies and training the trainers. Further, V. Hathaway and M. Dowd, who were assigned some management and staff coordination responsibilities, had an average of 15 years in this area.

2. Sound and Rigorous Staff Development Program

Many of the finest instructors now in the project had entered workplace literacy after spending years in business management, finance, anthropology, industrial engineering, actuarial science, sales, and other non-educational arenas. They were drawn to the field by a natural inclination to foster the learning of others, and they bring a rich array of strengths to the task of orchestrating instructional delivery, partnership building, and bottom-line accountability to the corporate client. Nevertheless their backgrounds and course work often leave gaps that necessitate a broad-based pre-service and in-service training program.

Under the EASE I & II grants, the project developed a staff development and training program, the Graduated Delegation Model, which mirrored aspects of its direct service delivery process to participants at cooperating companies. The steps are compared below in the following page

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DIRECT TRAINING & SERVICE DELIVERY PROCESS	STAFF DEVELOPMENT (SD) PROCESS
Workplace literacy audit	Identification and validation of core competencies required
Basic skills assessment [standardized tests]	Group assessment of SD topic preference
Curriculum outline draft	SD topic series draft
Curriculum revision reflecting ●Corporate needs ●Trainee needs	SD topic series revision reflecting ●Project needs ●Corporate needs
Multi-perspective evaluation of training by ●Trainees ●Supervisors ●Planning team	●Informal peer evaluation ●Classroom observation ●Student/supervisor feedback

Areas of Competency

There are three areas of competency underlying the model: knowledge of teaching/training theory, corporate savvy, and practical application of these to the instructional process. Additionally, there are five identifiable levels of proficiency:

●**Apprentice:**	typically a graduate student with little teaching experience
●**Retrainee:**	a career changer or an instructor changing content areas
●**Peer coach:**	instructor with sufficient skill to resource others informally
●**Lead teacher:**	highly skilled instructor who resources others through both internal and external staff development activities
●**Master teacher:**	most highly skilled instructor, is able to do original work in curriculum development and participate in training of trainers in the workplace

Training Modes

Under the proposed plan, formal staff development activities continued to be complemented by faculty networking and shadowing as well as the accessibility of internal expert resources. Internal staff development activities promoted capacity-building by requiring paired instructors to research a needed topic and present to their peers, who provided feedback for continuous improvement. This combination of formal and informal training modes was designed to appeal to varying preferences of individual instructors.

The assessment of instructor's needs was individualized and included an individual training plan for each instructor. The evaluation process was formalized, including a participant feedback instrument for staff development activities, and multi-perspective documentation of instructor competency gains.

The project philosophy of learner-centered instruction is mirrored in this plan in three components: a system of self and peer ratings, an individual goal setting process, and a menu of training modes to appeal to individual preferences and needs. The attached implementation plan for staff development exemplifies the stages at which various instructors enter the Project, the recommended training sequences and modes, and the time-lines for moving between levels.

3. Innovative Curriculum

EASE II curriculum content demonstrated a direct link between skills taught and the requirements of actual jobs as well as those of the changing workplace. The following program factors support this claim:

- Using the functional context model, the literacy and basic skills as they related to the job functions and tasks within the partner companies' environment were taught under EASE I and further refined under EASE II.

- The literacy audits at new partner sites and audit updates at existing partner companies were conducted and the process, refined. This procedure was critical in the development of an effective functional context curriculum. It involved interviews with key company personnel and employees, observation and analysis of job tasks being performed, identifying, validating basic skills needed and collection of written materials, manuals, forms, safety signs, posters, etc. Moreover, the literacy audit was essential to increase the educational provider's awareness and understanding of the particular job site's explicit and implicit culture, its mission, priority, management style and other demands and concerns faced by the company.

- The project continued to take the leadership role in the development and implementation of planning committees represented by all stakeholders at each of the partner sites. Past experience attested to the fact that the active involvement of these individuals was essential in building ownership and long-term commitments for institutionalization. The function of the committees was to provide input and validation of instructional competencies being taught, method of delivery, and the overall curriculum. This further ensured that skills taught were relevant to the actual jobs and the workplace.

E. **Knowing How to** Learn: discovers a rule or principle underlying the relationship between two or more objects and applies it in solving a problem

Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, integrity and honesty

A. Responsibility: exerts a high level of effort and perseveres toward goal attainment

B. **Self-**Esteem: believes in own self-worth and maintains a positive view of self

C. Sociability: demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings

D. **Self-**Management: assesses self accurately, sets personal goals, monitors progress, and exhibits self-control

E: **Integrity/**Honesty: chooses ethical courses of action.

Echoed in the results of the January 1994 survey, which was conducted with the business partners and designated instructional sites, was the unanimous agreement that literacy programs need to focus on transportable skills which would effectively assist workers in coping with changes in workplace requirements, technology, products and processes. The most common skills identified by our partners include: problem solving, team building, meta-cognition (learning how to learn), creativity and flexibility.

In light of the changing needs for workforce upskilling, EASE II curriculum and instruction had to be designed to be responsive to the unique needs of the partner companies on one hand, while integrating transportable, higher order thinking skills and learning how to learn, on the other hand. The curriculum framework had to also address the issue of accelerated learning, since neither the business nor the private sector had the luxury of long-term, repetitive training.
This curricular design and materials were based upon:

- The results of a literacy task analysis and literacy audit performed in partnership with the participating companies;
- The Individualized Education Plan (IEP);
- The articulated needs and goals of the partner companies as documented in needs assessment surveys conducted by NIU and TMA as an integral part of the planning process in designing the proposal;
- The recommendations of the planning and advisory committee at each corporate partner's site, fully articulated in the Management Plan;
- Ongoing input from supervisors;

- Work related materials provided by the company as well as by students participating in the classes, e.g., quality, technical, policy manuals, job routing forms, safety information, etc.

The curriculum and instruction:

- Used innovative teaching strategies such as Feuerstein's Mediated Learning Experience, Kagan's and Johnson's Cooperative Learning and Gardner's and Lazear's Multiple Intelligences which promote cooperation and teamwork consistent with the approach partner companies use on the job;
- Used "nested" curriculum in which skills were taught in an integrated fashion, within the workplace context;
- Linked workplace literacy instruction to technical skills being taught by companies, such as blueprint reading, SPC, metrology, etc., by soliciting input from the technical in-house trainer, supervisor, and expert at the company, team teaching and joint lesson planning;
- Addressed the needs of multiple levels of functional literacy within the student population;
- Considered and promoted understanding of multi-modal learning styles across cultures;
- Included problem-solving, problem-posing, and simulation exercises that are fully transferable to the workplace;
- Built upon the employee's prior knowledge and experience of the job content;
- Began piloting "learning how to learn" and activities aimed at increasing "higher level" critical thinking skills; based upon the works of Dr. Reuven Feuerstein's Structural Cognitive Modifiability, Instrumental Enrichment and Dynamics Assessment of Learning Potential;

Because of the innovative aspects of Dr. Feuerstein's work and the positive results from our initial pilot, funded by private resources, it is worthy of further discussion here. What follows is the rationale for applying this innovation and a brief background on Feuerstein's work.

The reason for this selection initially emanated from our partners' expressed need to cope with the pace of change in their workplace, and their interest in accelerated learning and cognitive development, especially critical thinking/problem solving and learning-how-to-learn. They also expressed a genuine concern for their extremely low-level achieving LEP employees, many of whom are non-literate in their own native language, for whom the present training yielded uncharacteristically low gains. Our instructors echoed the same sentiment during EASE I and II. This gave us the impetus to conduct an extensive review of the literature in the field of educational psychology and cognition.

Several experts were consulted (e.g. Lazear, author of 7 Ways of Knowing; Bellanca and Fogarty, authors of Blueprint for Thinking, Patterns for Transfer). What emerged was the most comprehensive, overwhelming body of evidence, totalling over 1,000 similar findings, in support of Dr Reuven Feuerstein's theories and applications. His works represent a life time research of more than 50 years, beginning in 1945 when he arrived in Israel from Rumania. Put in charge of the task of educating a diverse multi-lingual/multi-ethnic refugee student population who performed poorly, he found that conventional methods were useless. He began to conduct research and develop a system for "Structured Mediation" through the use of 14 instruments.

Because print literacy was a learning barrier for his students (as it is for the LEP adult in workplace ESL classrooms), Feuerstein developed instruments designed to circumvent barriers of culture and language. Each instrument contains exercises which focus on a specific cognitive function (e.g. visual-spatial relation, comparisons, sequencing, etc.). They are representational and abstract in form and vary in design from simple to more complex. These exercises always begin with tasks that can easily be mastered by students at any level, thus building in positive reinforcement. Feuerstein used these instruments to develop the student's verbal fluency by listening to the mediator's simple instructions, by identifying and labeling problem-solving patterns (as would an adult LEP student in naming tools and work related terminologies), and by using their limited second language proficiency to explain how they completed the cognitive development.

In Feuersteins's system, it is not the role of the mediating teacher to give answers, lecture, or leave the student alone to fill in work book blanks. It is the mediator's role to ask questions that probe the student to explain how he/she solved the problem posed by the instrument. As the student uses the second language, the mediator(teacher) coaches. This parallel coaching of language and thought champions "learning by doing" and "learning by reflecting". As students acquire more terminologies, they are coached to identify their own thinking process and transfer it to outside classroom context (in this case, the workplace). At this point, they are doing what a constructivist learning theorist such as Yale University's Robert Sternberg would describe as the making of meaning. "The person who learns," Sternberg has said, "is the person who expresses" (1991).

As stated by Feuerstein's theory of Mediated Learning Experience, in order for mediated learning to occur, the following criteria must be met:

- Intentionality/Reciprocity
- Challenge
- Sharing behavior
- Individuality
- Self regulation and control of behavior
- Meaning
- Transcendence
- Goal planning
- Self change
- Competence

From his research with his students, observing that they were actually changing their intelligence and developing cognitive abilities as a result of working with the instruments, Feuerstein developed his theory of cognitive modifiability. Disagreeing with those who had argued for half a century that the intelligence is fixed, he pointed to case after case of poor and traumatized students, brain-damaged children, Down's Syndrome children, gifted underachievers, students with language blocks, and even high-functioning adults whose intelligence was changed through structured mediation. Of special note are the long-term effects of the structural cognitive changes, such as systematic methods of thinking, appropriate strategies for problem solving, and greater cognitive efficiency that enhance the learner's ability to benefit each time he/she encounters the environment. These effects show a progressive increment over time and have become known in the literature as the "divergent effects" of Instrumental Enrichment (Feuerstein et al., 1980). These effects show how students, mediated through Instrumental Enrichment, continued to improve their cognitive growth even after the intervention stopped. This continuation contrasts with the effect pattern of conventional instructional interventions that regresses to the mean when the intervention has ended (Feuerstein and Rand, 1977). This repeated finding has far reaching implications for workplace education.

Although not as well known in the United States, his system has spread throughout the world, primarily for work with young adults Several barriers prohibit greater application of his work in the United States:

- Resource materials were not readily available in the United States until now.

- Training in its implementation was limited to the availability of a handful of certified master trainers in the U.S.

- Because of the depth of understanding of the theories and the level of skills required, the training requires considerable investment of staff time, and is quite rigorous (deemed too rigorous by its critics).

- Instrumental Enrichment itself is not a quick fix program. As originally used with young adults, it requires 300 instructional hours, spread out over three years.

As Feuerstein's work is based on young adults, adaption for adult workers has been limited. Several efforts are underway in Israel and France. In the U.S., the only pioneering pilot was launched and just completed by Motorola in Schaumburg, IL. It was developed and implemented by Dr. Meir Ben-Hur, a protege of Dr. Feuerstein himself. Two hundred employees at the Schaumburg plant were randomly assigned to participate in IE. They attended two hours/week for 18 months.

The primary goal of Feuerstein's Instrumental Enrichment Project is to increase higher order thinking and the capacity to learn. There are six sub-goals which guided the project. These goals are compatible with those of Project EASE. The sub-goals are:

- To correct the kind of thinking patterns that impair learning.

- To motivate people to solve problems by offering them enjoyable problem solving experiences.

- To make thinking on the job automatic, consistent, and permanent.

- To change participants' attitudes towards themselves from passive recipients to that of active generators of information.

- To enhance communication skills.

In a typical class session, the participants are asked to complete a concrete task-exercise focusing on a cognitive function (e.g. visual-spatial relations, comparisons, sequencing, etc.). These functions represent a structured set of easy-to-complex tasks. A mediation process follows. This involves small and large group discussions, facilitated by the mediator (trainer), whom assists the learner to bridge what is learned through the completed task and transfers/contextualizes it to the workplace. Students are asked to reflect on and describe their thinking process.

Although the instructional phase of the project at Motorola has been completed, it is undergoing a third party evaluation. Follow-up and post-testing data collection have not been completed. Preliminary data indicates that the project is successful.

With the assistance of Dr. Meir Ben-Hur, a protege of Dr. Feuerstein, two levels of IE training were conducted for EASE staff. At the writing of this report, a 40 hour IE pilot instruction was completed. This represents a second effort in the United States, after Motorola. Although the participants went through only 40 hours of instruction, the pre and post test results, using a standardized cognitive test, yielded statistically significant results. OAI expects to publish the findings of this study in the near future. It will build upon the Motorola experience. It is anticipated the following major additions will be explored as OAI continues its work in this area:

- Selecting instruments (exercises) which focus on cognitive functions in the workplace.
- Adjusting the length of training and scheduling of classroom instruction to conform to the constraints and policies of partner companies.
 (Feuerstein's application for youths includes at least 300 hours of instruction, spanning a three year period.)
- Refining lessons and exercises with varying levels of complexity to meet the needs of the adult learners, within the workplace context.
- Conducting a review and analysis of partners' manufacturing processes and operations, the corporate culture and workers' needs.
- Integrating Mediated Learning Experience (MLE) as an instructional strategy.

4. Thoughtful Management and Partnership Building Philosophy and Practices

Although core management functions were assigned to the Project Director and Project Manager, they were both extensively involved in the planning and implementation of every aspects of the project. They continued to provide partnership/capacity building services to all partners. They ensured that adequate coordination is provided. Planning Team and Work-teams played an important role in management, in keeping with the partnership's movement toward team work and participatory management practices. The Planning Team comprised of: the Project Director, Project Manager, the Curriculum and Staff Development Coordinator and the Master Instructor/Field Coordinator. The Team met weekly to: report on work in progress in their areas of responsibilities, identify problems and solutions and plan activities. The Work-teams consisting of part time and full time instructional staff met monthly to share resources and work on areas of concerns, such as lesson planning, curriculum design, audit/student assessment instrument, record-keeping, etc Staff meetings and in-service training were held monthly, in conjunction with Work-team meetings. To ensure quality, instructional staff were observed in the classroom twice annually by the Curriculum/Staff Development Coordinator and/or the Master Instructor. Instructional staff performance evaluation was jointly conducted on an annual basis, by members of the Planning Team, taking into consideration the feedback from client companies, students and classroom observations. The Project Director was also responsible for the performance evaluation of the Planning Team members

All business partners and instructional sites were consulted on a regular basis, through on-site visits, phone contacts and correspondences. Based on EASE I and II experience, two to three on-site consultations were necessary, prior to scheduling an audit and/or employee assessment. For new partners, one to two moth lead time was needed to assist them in the development of a Planning Team, prior to program start up. The Team will include representation from management, the educational partner, employees and labor, as appropriate. The purpose of the Team was to provide continual guidance and feedback to the Project regarding: training needs, scheduling, curriculum, instruction, supportive services and evaluation. The Team normally met on a quarterly basis or more frequently, as needed.

Prior to actual instruction, a meeting was routinely held to present partner companies/Planning Teams with findings from the audit and employee assessment, and provide recommendations on course content and student placement. It should be noted that assessment scores were not reported by employee names. They were, rather, coded and represented by bar or pie charts, by departments. Students' scores were mailed directly to their homes and project instructors/staff were also available to meet privately with the students to explain their test scores prior to classroom instruction.

Another meeting was customarily held upon completion of each class to discuss student gains, solicit feedback and recommend the next course of action. Prior and after classroom instruction, project instructors usually interact with students and company personnel on the plant floor, including supervisors. Their involvement helped to reinforce the application of learned competencies on the job. Thus, partner companies/sites were constantly appraised of project progress through consistent contacts with project staff.

It is clear that part of the equation for EASE's success is not only effectiveness and efficiency but the management philosophy itself, which must include true partnership building.

At cited by EASE I Third Party Evaluation in her final report, "Although the project did not specifically list the formation of solid partnerships as an objective, this nevertheless, became and important outcome. Jorie Philippi, EASE II Third Party Evaluator, further concurred with this observation in her follow-up letter. after her first on-site visit. Although partnership building has been perceived as part of the management function, our experience demonstrates that it is a *sine qua non* to project success and should be considered as a direct service and be treated with equal importance. As we build a partnership, we build each other's capacity.

As our business partners strive for total quality management, so does the project. We believe that the underlying mission of this partnership was and is to contribute to the high performance of its members, while institutionalizing learning in the workplace. As such the staff seek, first, to understand the cultures, constraints and concerns of the partners and second, do everything we can to assist. For example, it is not unusual for us to respond to an emergency call from a business partner who seeks our help drafting a company-wide training plan for a customer audit, due the next day. We have responded to small business partners who need assistance with documentation for ISO 9000 Certification, by developing an internship program with the University's English Department, which allowed several undergraduate technical writing interns to be placed at EASE companies, at no cost.

Without using the project's funds, EASE co-sponsored with the University's Office of External Programs, a leadership seminar series which brought experts of national prominence who are forward thinker in the field of management, such as: Dr. Steven Covey, author of The Principle-Centered Leadership; Dr. Warren Bennet, author of On Becoming a Leader; and Ricardo Semplar, author of Maverick. Many partners participated and benefitted from these seminars. Last December, the project also co-sponsored, with the International Renewal Institute, a presentation and reception for Dr. Reuven Feuerstein. This event enabled the partners to be exposed to an innovation which can address their concern in reading cognitive development of employees. Enthusiasm generated from key partners in attendance, gave the project the impetus to proceed with further investigation of Dr. Feuerstein's theories and applications, proposed herein. Moreover, project staff routinely provided information, referral and follow-up services in areas not directly related to the project. For example, an informational session is being planned with TMA on the Tech-Prep program in Illinois and how members can benefit from it. EASE was also involved in providing input the Chicago School- to- Work initiative, which could potentially be helpful to the partners. It is this orientation towards uncompromising, value-added services that is fast, focused, and friendly which sets EASE apart.

To assist the project in tracking the progress of its partners, which would move them from the awareness of innovative intervention, i.e., the workplace literacy program, to the renewal/institutionalization stage, OAI developed a structured five-stage change model, based on their levels of organizational readiness to adopt innovations. Table appearing on the next page displays the five stages of partnership.

The benefit the project reaped from this strong partnership is far reaching. EASE has succeeded in establishing a climate of cooperation and willingness to adopt/adapt educational and training innovations, on the part of the corporate partners. It has also identified critical elements of organizational readiness and the correlating service configurations for each level.

It can be concluded that it will take an average of three years to move partners from stage I to stage IV. Those EASE partners who fall into stages IV, representing 66% of the total business participation, have continued funding the program, at some level, without federal dollars. They are those who are now open to innovations and will continue to seek creative ways to establish mutually beneficial partnerships.

It is through the strengths of this partnership that OAI is now able to continue its work in accelerated learning, learning how to learn, through the application of Feuerstein's theories and his vast body of work.

Summary of Best Practices

The design of the project was built upon solid experiences and insights gained during the previous two granting periods. The distinctive elements of the proposed plan of operation contributed to the high quality of its overall design. These key elements are briefly highlighted below:

- The curriculum design was responsive to the need to learn from the functional context curriculum, demonstrated during EASE I and II, and advanced the design process one step further. To ensure broad-based replicability, curriculum took into account portable skills necessary for successful performance in the emerging workplace. These skills are identified in the ASTD study and the SCANS report. It further explored the theories and applications of Dr. Reuven Feuerstein.

Stages of Development of EASE Partnering Companies

Stage	Service Focus	Timeframe
Stage I - Aware and Interest: New to the partnership Limited or no experience/knowledge in providing workplace literacy training Aware of need but cannot articulate it Pressures to implement the program are external (i.e., ISO 9000, TQM, vendor requirements) Past in house training experience hsa been sporadic and unsuccessful Support for program limited to one or two individuals in the company	• Program planning • Initial literacy and portable skill audits • Employee assessment • Limited pilot instruction • Partnership building • Company needs assessment	1-2 years
Stage II - Informed: Have been with partnership for 2 years or have provided training using other resources Have had limited but successful piloting experience Willing to expand program to other groups of employees Because of initial success, program begins to generate more internal support See connection of basic skills to other training	• Audit updates • Assessment of employees not previously assessed • Replication and expansion of pilot instruction • Partnership building	1-2 years
Stage III - Involved: Have been with partnership or have had successful program experience for 2+ years Program receives full support from top level management Have introduced other innovations into the workplace (i.e., gainsharing, new machinery, SPC, technical training, etc.) Have expanded program to train native English speakers and LEPs Have integrated basic skills with other technical and management training Have developed a formal planning committee represented by all stakeholders.	• Audit updates • Employee assessment updates • Refinement and further replication of curriculum and instruction, plant-wide • Assessment of needs for capacity building and development of action plans • Partnership building	1-2 years
Stage IV - Committed: Have been with partnership and will continue Have observed program success in terms of productivity Program received support at all management levels, including line supervisors Have been involved with every aspect of partnership, including disseminating own success Have developed and implemented long-range, cohesive training plan Have seen benefit of training as HR investment Mangement has shifted to employee-centered practices Committed and ready for capacity building	• Identification of needs for capacity building • Development of action plan • Implementation of plan • Demonstration of curriculum and best practices via Graduated Delegation/Capacity Building model	2-3 years
Stage V - Renewal: Have been with partnership from beginning Have received fully extensive capacity building services into on going training Have received success in adaptation of innovation Equipped to access other resources Committed to using own funds Achieved in house expertise for self renewal	• No additional services needed	(n/a)

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- The literacy review and audits placed special emphasis on the identification and analysis of cognitive functions and other portable skills as well as identification of increased skill requirements for the changing workplace.

- An essential component of the project was its capacity building and institutionalization plan which recognizes that the business partners are at varying stages of organizational development in terms of their readiness to embrace innovations. Their needs for service emphasis are therefore different.

- Another cornerstone of the project was its staff development and training plan which will be replicated by the two cooperating educational partners and carefully documented for further dissemination. The plan included: core competencies for instructional personnel, an instrument for assessing staff needs; delivery approaches and length of training, and a strategy for assessing staff knowledge and skills gain. It also planned for the refinement and validation of the Graduated Delegation Model of staff development. Through this approach, the plan provided for the capacity building needs of its educational partners as well.

- The project's management plan reflected a strong belief in:
    - The Principle Centered Leadership, advocated by Dr. Steven Covey
    - Customer driven services that are fast, focused, and friendly with uncompromising quality and integrity
    - Continuous quality improvement through ongoing self-evaluation process

STAFF DEVELOPMENT 1994

STAGE OF DEVELOPMENT	TRAINING FOCUS	ACTIVITIES	CHARACTERISTIC MODE	TIMELINES	PERSONNEL
I. **Apprentice**	● Basic principles of adult learning and language acquisition	1. Provide orientation to project mission, philosophy of training, and resources	● Graduated Delegation Model [primary but not sole mode]	At hiring	OAI-MI/FC
● Graduate student inter	● Learner-centered instruction				
● Has substantial coursework but little practical experience	● Training issues in industry	2. Co-plan individualized training		"	OAI-CSDC
	● Lesson plan basics	● Provide Instructor Company Checklist [ICC]			
		● Compile schedule of proficiency demonstration			
		● Assist in goal-setting process		"	"
		3 Pair with Master Instructor for Graduated Delegation Model, one cycle		"	"
		4. Review Master Instructor's Observation/Feedback [O/F], end of 1st cycle		5th month	"
		5. Conduct class visit and complete O/F, 2nd cycle		9th month	"
		6. Jointly update ICC		10th month	"
		7. Continue individualized and group training as necessary		11th 24th month [12 - 24 months total]	"

II. Retrainee	• Company-specific training needs • Contextualized learning • Classroom management issues • Learning strategy training • Graphic organizers	1. Provide orientation	• Shadowing [primary but not sole mode]	At hiring	OAI-MI/FC OAI-CSDC
• Seasoned teacher or trainer from another field		2 Co-plan individualized training		"	"
• Needs support in transition to adult education or new content area		3 Suggest training resources		"	"
		4 Pair with Lead Teacher or Master Instructor for 1-3 class shadowing experience		"	"
		5 Conduct class visit and complete O/F		by 4th month	"
		6. Jointly update ICC		by 6th month	"
		7. Continue individualized and group training as necessary		7th - 12th month [6 - 12 months total]	"
III. Peer Coach		1. Provide orientation	• Internal expert resource	At hiring	OAI-MI/FC
• Well grounded in most aspects of workplace literacy but some knowledge/skill gaps remain	• Evaluation strategies • Relating course to corporate training plans and needs • Problem-solving activities • Nested curriculum design	2 Co-plan individualized training	• Participant, external staff development	"	OAI-CSDC
		3. Suggest training resources			"
• Some ability to resource peers		4 Review lesson plans for nested design	• Co-presenter, internal staff development	"	
		5. Interview corporate client regarding curriculum fit		by 3rd month	"
		6. Conduct class visit and complete O/F		by 4th month	"
				by 6th month	"
		7 Jointly update ICC		by 9th month	"
		8 Continue individualized and group training as necessary		10th - 24th month [12 - 24 months total]	"

IV. **Lead Teacher**		1. Provide orientation	● Literature research	At hiring	OAI-MI/FC
● Strong grounding and experience in workplace literacy	● Infusion of higher order thinking and problem-solving ● Innovative curriculum design ● Building partnerships with supervisors	2. Co-plan individualized training		"	OAI-CSDC
● Ready to address some emerging corporate client needs		3 Provide opportunity to do internal staff presentation	● Presenter, internal staff development	by 4th month	"
● Often able to resource peers		4 Interview corporate client supervisors regarding level of partnership with instructor	● Panelist or presenter, external staff development	by 6th month	"
		5 Conduct class visit and complete O/F		"	"
		6. Review curriculum and lesson plans		"	"
		7 Jointly update ICC		by 12th month	
		8. Provide resourcing and continue to monitor training as necessary		13th - 24th month	"
				[12 - 24 months total]	
V. **Master Instructor**		1. Provide orientation	● Self directed research or researching	At hiring	OAI-MI/FC
● Full grounding in workplace literacy	● Self-selected options	2. Co-plan individualized training		"	OAI-CSDC
● anticipates corporate client and learner needs and develops options for meeting them		3 Provide opportunity to monitor graduate intern via GDM	● Presenter, internal and external staff development	"	"
● Guides Apprentices through the Graduated Delegation Model		4 Jointly update ICC		"	"
		5 Monitor implementation of self-selected training plan		by 12th month	"
				yearly	

EASE INSTRUCTOR COMPETENCY CHECKLIST (ICC)

_____Pre-assessment

_____Post-assessment

Kindly rate proficiency end indicate preferred type of demonstration for ratings of 3 or above	High 5	4	3	2	Low 1	Preferred Demonstration of Proficiency: a. Presentation to Peers b. Oral Interview c. Classroom observation
COMPETENCY						
A. EDUCATIONAL THEORY						
Can state principles of:						
1. Adult learning						
3. Contextualized learning						
4. Cognitive development (Gardner, de Bono, Feuerstein)						
5. Learner-centered instruction						
6. Learning strategy training						
7. Cooperative learning						
8. Nested curriculum design						
Can identity/explain:						
9. Critical thinking skills						
10. Creative thinking skills						
11. At least 5 key graphic organizers						
B. CORPORATE RELATIONSHIP						
12. State current training issues in industry						
13. Identify company - specific training concerns						
14. Relate course outline to overall company training plan						
15. Build training partnerships with supervisors						
C. INSTRUCTIONAL APPLICATION						
16. Develop lesson around work-related competency						
17 Plan/implement 4-part lesson [Introduction/Practice/Application/Evaluation]						

18.	Nest thinking skills, team skills, and/or graphic organizers in lesson						
19.	Integrate student [IEP] goals into instruction						
20.	Modify curriculum to meet changing company goals						
21.	Vary groupings [Large, Small, Pairs]						
22.	Employ multi-sensory techniques						
23.	Vary type of evaluation (Self, Peer, Teacher]						
24.	Teach learning strategies						
D.	**ELECTIVE TRAINING**						
25.							
26.							
27.							
28.							

I have selected the following 3 competencies as goals for the next 12 months:	My competency self-rating now	My competency self-rating after 12 months

Date________________ **Instructor Name:**________________________________

ype of Assessment: ______**Self** ______**Peer** ______**Staff Development Coordinator**

PROJECT EASE

TIPAWAN REED, PROJECT DIRECTOR

WORKPLACE BASIC SKILLS

CURRICULUM INTRODUCTION

AND
KEY LESSONS (c)

PREPARED by:

Northern Illinois University
Office of Applied Innovations
January, 1994

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PROJECT EASE WORKPLACE CURRICULUM

Purpose and Scope

The Project EASE workplace curriculum is designed to guide workplace basic skills instructors in the design of customized curricula for the precision metal work industry. The curriculum includes five areas of concentration, which are represented here as Key Lessons:

- Basic Technical Mathematics
- Basic Technical Reading
- Three levels of Vocational English as a Second Language (VESL):
    - Beginning
    - Intermediate
    - Advanced

Philosophy and Instructional Strategies

CLIENT-CENTERED
Sensitive to the current paradigm shift in management toward worker empowerment and bottom-up responsibility, the curriculum is intended to be synergistic with other innovations which EASE corporate partners are implementing. Many of these, such as quality teams, problem-solving teams, owner-operator cells, gain-sharing, and profit-sharing require traditionally task-oriented workers to take an active part in the planning, development, evaluation, and trouble-shooting aspects of the production process. The list of skills perceived to be basic has grown in this more demanding context. The basics now include critical thinking, cooperative teamwork, and computer literacy, as well as the more traditional skills in verbal communication, comprehensive reading, and computation.

Project EASE staff maintain client sensitivity by convening corporate planning teams to work in partnership with them during the customization process. On completion of the EASE Literacy Audit (Addendum) and the assessment process, EASE staff identify the gaps between basic skills demands of the jobs audited and the basic skills levels of the workers who do them. Proposed course outlines are prepared to address the skills gaps observed (Addendum), and competency checklists are designed to focus the evaluation of each student's progress. (Addendum) Project staff then reality-test the audit summary with the corporate planning team. Any necessary alterations to the course outlines and competency checklists are made jointly at that time. Supervisors receive an orientation to their role, which is crucial to the success of the partnership. Instructors meet with them before, during, and after the course to solicit their input on student progress via the Record of Progress Observed. (Addendum) Course content is modified whenever necessary during the instructionasl cycle in order to reflect the changing priorities of production and company training plans.

LEARNER-CENTERED

Learner needs and goals are assessed with the Individual Education Plan (Addendum), and these are incorporated into the curriculum already revised by the planning committee. Learners are asked to evaluate themselves routinely in terms of the progress they make toward personal goals and the application they make of targeted teamskills. Additionally, each learner completes a structured and/or open-ended evaluation of the instruction and its impact on his skills and attitudes (Addendum)

NESTING MULTIPLE TARGET SKILLS

The EASE curriculum design is indebted greatly to James Bellanca and Robin Fogarty of the Illinois Renewal Institute for their outstanding work in the areas of critical/creative thinking models and curricular options. The nested curriculum has proved to be ideal model for maximizing the effectiveness of EASE training cycles, as it integrates content-specific, social, and thinking skills development into a single lesson. Graphic organizers have been incorporated as ideal facilitators of thinking skills, quickly clarifying the relationship of ideas and maximizing on the brain's preference for visual as opposed to verbal data.

LESSON FORMAT

Many workplace literacy instructors have been trained and inserviced in a climate of eclectic commercial text use. However, much like their counterparts in business and industry, they are being encouraged to act as owner-operators of a quality service which is fast, friendly, focused and flexible. And they must do so in a manner which is informed by the best androgogical research and development. To meet the evolving needs of a fast-paced training climate with a high demand for quality and client accountability, workplace literacy instructors more than ever need to understand the structure of a sound and rounded-out lesson plan and to be able to use it in creating and implementing fresh lessons. The EASE curriculum has adapted Thomas and Kuy's lesson format to include the following components:

•	Presentation:	Sets the workplace scenario and accesses the learner's prior knowledge of it
•	Practice:	Guides a teacher-directed activity which usually focuses on developing several skills simultaneously
•	Application:	Usually conducted as a team activity in which learners select from among several given options or issues that are company- or department-wide
•	Reinforcement:	Nearly always a self-directed team activity which is related directly to the jobs of team members
•	Evaluation:	May have a teacher observation component but is more typically designed to invite learner self-reflection or observation of peer behaviors

Key Lessons

Each lesson represents one of the five curricula which serve to guide a 36-hour cycle of instruction delivered in 90-minute segments, twice weekly, for a period of 12 weeks. Most lessons require several 90-minute instructional periods, which would of necessity be bridged in the second period with a review of the first period's activities. The attached materials are intended to guide instructors through instructional activities and at the same time model a sound format for new lesson development. Graphic organizers and evaluation tools are attached in a developed form to clarify their use in the lesson.

PROJECT EASE WORKPLACE BASICS
KEY LESSONS

TARGET GROUP	WORKPLACE COMPETENCY	TECHNICAL &SUB-TECHNICAL VOCABULARY	SPECIALIZED SKILLS	THINKING SKILLS	TEAM SKILLS	GRAPHIC ORGANIZER
Beginning ESL	Names tools, equipment, measuring instruments	Allen Wrench Micrometer Digital Scale Gage Hand Truck	Grammar: • Present tense • What questions	Classifying, Brainstorming	Participating	Grid/Matrix
Intermediate VESL	Describes safety procedures; completes injury report	Steel toe shoes Wrist guards Hazard Debris Burn Fracture	Grammar: • Passive voice	Attributing	Valuing the ideas of others	Wh Model Attribute Web
Advanced VESL, ABE, Pre-GED	Solves job-related problem	Focus Cause Solution Alternative Rank	Grammar: • If clauses	Problem-solving	Staying on task	Mind Map Ladder
Mathematics	Graphs x and r on SPC /chart	Mean Median Mode Range Trend	Mathematics: Plots and reads data on a graph	Associating relationships	Giving explanations	Line Graph
Reading	Uses a technical manual table of contents	Document System Purpose Scope Procedures	Reading: Locates information within a text	Sequencing	Taking roles	Flow Chart

KEY LESSON PLAN: VOCATIONAL ESL (VESL)

TARGET GROUP	BEGINNING VESL (SPL I - III)
Workplace Competency	Names tools, equipment, and measuring instruments used in own job
Technical Vocabulary	Allen wrench, micrometer, digital scale, gage, hand truck, etc.
Grammatical Patterns	Simple present tense of IS, NEED Simple questions: WHAT'S THIS?
Thinking Skills	Classifying, Brainstorming
Team Skill	Participating
Graphic Organizer	Grid/Matrix

INSTRUCTIONAL ACTIVITIES

1. **COMPANY CONTEXT:** Employees need to communicate with and cross-train each other in English regarding tasks. Many LEP employees do not know the English names of the tools, equipment, and instruments they use daily.

2. **INTRODUCTION/PRESENTATION:** Identify departments students represent and list them on the board. Ask students to name items they use at work daily (excluding safety equipment). Draw a three-column grid/matrix on the board and label it DEPARTMENT, TOOLS/EQUIPMENT, and MEASURING INSTRUMENTS. Guide class in selecting items from the list to classify under the given headings.

3. **PRACTICE a:** Team students according to department and have them complete a blank grid/matrix of the tools, etc. which are specific to their worksites. Discuss the verbal and non-verbal behaviors of PARTICIPATING. Model the behaviors and ask teams to practice them as they complete the grids. Teams evaluate themselves on PARTICIPATING skills and then share their grids with the class. Students check their grids with supervisors and bring actual tools and instruments back to class.

   PRACTICE b: Teams report on additions to grid as suggested by supervisors. Model the question/answer pattern: WHAT'S THIS? IT'S A... Pairs quiz each other using the realia they have brought. Model the use of Total Physical Response (TPR) and have pairs practice using: I NEED A.../PLEASE HAND ME A... as grammatical patterns.

4. **APPLICATION:** Elicit a brief realistic dialog from the whole class, using as many newly learned words and grammar patterns as possible. Practice it chorally several times. Each pair performs the dialog for the class. Pairs then revise the dialog in some way to reflect their work situation and again perform for the class.

5. **REINFORCEMENT:** Have each student lead class to his/her work station and identify frequently used tools, in English.

   Brainstorm possible solutions: Mario doesn't know the English name for one of his tools. What can he do to learn this new word? How can he practice using it?

6. **EVALUATION:**
   - Student self-evaluation and peer evaluation of PARTICIPATING.
   - Teacher observation of student's contributions to grid and performance in dialog.

7. **ATTACHED MATERIALS:**
   - The Grid
   - Team Skill Behavior Sheet: Participating
   - Team Skill Evaluation Sheet: Participating

THE GRID/MATRIX

DEPARTMENT	TOOLS/EQUIPMENT	MEASURING INSTRUMENTS
Punch Press	Allen wrench Adjustable wrench Combination square	Micrometer Dial caliper Comparator
Secondary	Allen wrench File Wire basket	Dial caliper Pin gage
Shipping/Receiving	Pallet knife Tape dispenser Hand truck	Digital scale

TEAM SKILL BEHAVIOR SHEET: PARTICIPATING

PARTICIPATE = 1. LISTEN and SPEAK
2. GIVE IDEAS

LOOKS LIKE	SOUNDS LIKE
● All sit forward	● I think...
● All look at team speaker and lesson	● Me too.
	● Not me.
	● Excuse me, I have something to say
	● I have 2 ideas....

TEAM SKILL EVALUATION SHEET: PARTICIPATING

Circle YES or NO:

1.	I listened to others speak.	YES	NO
2.	I gave one idea or more.	YES	NO
3.	All team members listened.	YES	NO
4.	All team members gave one idea or more.	YES	NO

Next time we can improve by____

____

____

TEAM MEMBER NAME____________________ TEAM NAME______________________

Project EASE, 1993

KEY LESSON PLAN: VOCATIONAL ESL (VESL)

TARGET GROUP	INTERMEDIATE VESL (SPL IV - VI)
Workplace Competencies	Describes safety procedures Completes injury report form
Technical & Sub-technical Vocabulary	Steel toe shoes, safety glasses, wrist guards, hazard, debris, flammable, aisle, minimum clearance, burn, cut, fracture, sprain, hernia
Grammatical Patterns	Passive voice: a)________s MUST BE WORN when entering this area/working at this station. b) A minimum clearance of 3 feet MUST BE MAINTAINED around power panels, alarm boxes, and fire extinguishers.
Thinking Skills	Attributing
Team Skills	Valuing the ideas of others Encouraging team accuracy
Graphic Organizers	Grid/Matrix Wh Model Attribute Web

INSTRUCTIONAL ACTIVITIES

1. **COMPANY CONTEXT:** Plant workers must know and understand the importance that company safety procedures play in the prevention of injury.

2. **INTRODUCTION/PRESENTATION:** Ask students what kind of injuries might occur on their jobs, and make a list of these on the board. Then ask them to identify some safety procedures they follow on a regular basis and record these as well. Discuss the insurance coverage implications (to the company) of a job injury and (to the employee) of accurately or inaccurately reporting an injury.

3. **PRACTICE:** Form small groups and give each group a partially filled grid to complete, modeling one or two entries as examples. Model the behaviors of VALUING THE IDEAS OF OTHERS and ask groups to practice these during the grid completion process.

4. **APPLICATION:** As a group, create a typical injury scenario, using the Wh Model to report the event. Then use the Attribute Web to describe the injury accurately and completely. Elicit details needed to complete the injury report form.

5. **REINFORCEMENT:** Form teams and have each make a sketch of an imagined injury (e.g. a broken toe) and to record the pictured details using the Wh Model and Attribute Web. Again ask them to practice the behaviors, VALUING THE IDEAS OF OTHERS during this process. Discuss the principles of accuracy and completeness, such as asking the six Wh questions and recording important details. Have groups complete an injury report form based on their injury and to select a reporter to present to the large group. Ask peer groups to rate the accuracy and completeness of each report.

6. **EVALUATION:**
- Student self and peer evaluation of VALUING THE IDEAS OF OTHERS
- Teacher observation and peer evaluation of accuracy and completeness of reports

7. **ATTACHED MATERIALS:**
- Grid/Matrix
- Wh Model
- Attribute Web
- Team Skills Behavior Sheet: Valuing the Ideas of Others
- Team Skills Evaluation Sheet: Valuing the Ideas of Others
- Accident Report

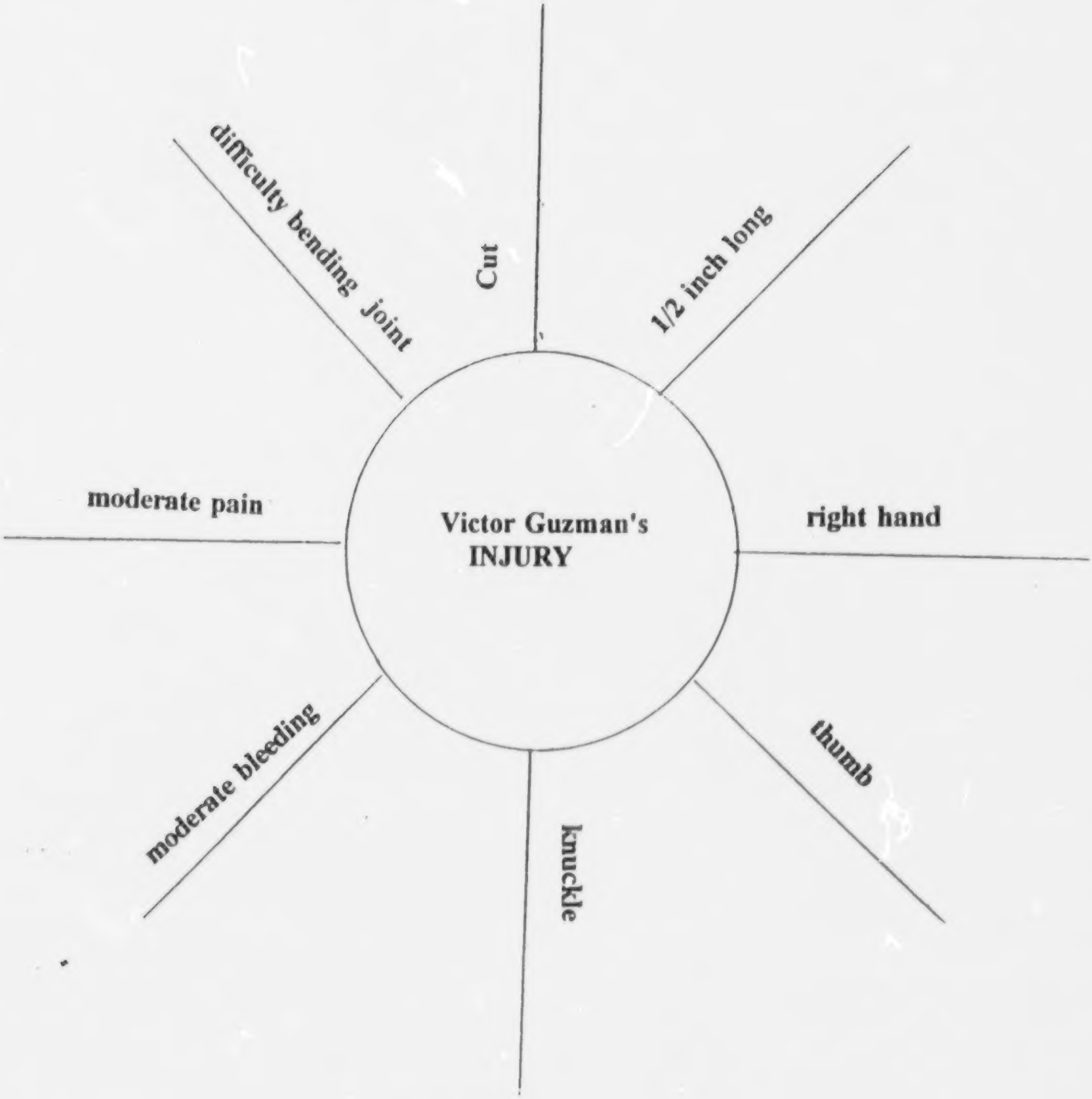
GRID/MATRIX

INJURIES TO PREVENT	SITUATION	SAFETY PROCEDURE
Eyes ● burns ● wounds	Operating welder Operating punch press	Wear welding glasses Wear safety glasses
Ears ● hearing loss		
Hands ● ● ●		
Feet ● ●		
Back ●		
Groin ●		

Wh MODEL

WHO	Victor Guzman
WHAT	Accident: cut thumb of right hand
WHEN	Monday, 8:30 a.m.
WHERE	Press room, at Machine 1083
WHY	Hole in safety gloves
HOW	Lifting parts from bin

ATTRIBUTE WEB


Victor Guzman's INJURY
Cut
1/2 inch long
right hand
thumb
knuckle
moderate bleeding
moderate pain
difficulty bending joint

TEAM SKILLS BEHAVIOR SHEET: VALUING THE IDEAS OF OTHERS

LOOKS LIKE	**SOUNDS LIKE**
• Smiling	**• That's a good idea.**
• Nodding	**• We haven't heard from you, Chin. What do you think?**
• Making a gesture of affirmation (e.g. high 5)	**• That's an interesting idea. Do you have any others?**

TEAM SKILL EVALUATION SHEET: VALUING THE IDEAS OF OTHERS

Circle YES or NO:

1.	I invited others to give ideas.	YES	NO
2.	I said something good about others' ideas.	YES	NO
3.	I gave a high 5 or something similar.	YES	NO
4.	Others invited me to give ideas.	YES	NO
5.	They said something good about my ideas	YES	NO
6.	They gave me a high five or something similar.	YES	NO

Next time we can improve by____

____

____

TEAM MEMBER NAME____________________ TEAM NAME____________________

ACCIDENT REPORT

NAME OF INJURED PERSON________________________________

DATE OF ACCIDENT________________________________

TIME____________ LOCATION________________________________

DESCRIPTION OF INJURY:________________________________

____

CAUSE OF INJURY:________________________________

____

____

ASSISTANCE GIVEN TO INJURED:________________________________

____

SIGNATURE OF PERSON COMPLETING THIS FORM________________

POSITION________________________________

DATE________________________________

KEY LESSON PLAN: VOCATIONAL ESL (VESL)

TARGET GROUP	ADVANCED VESL (SPL VII+)
Workplace Competency	Solves a job-related problem within a team
Sub-technical Vocabulary	Focus, cause, solution, alternatives, options, rank, prioritize, evaluate
Grammatical Patterns	I THINK THAT... IF______, THEN______.
Thinking Skills	Problem-solving
Team Skill	Staying on task
Graphic Organizers.	Mind Map, Ladder

INSTRUCTIONAL ACTIVITIES

1. **COMPANY CONTEXT**: Employees are often confronted with problems related to their jobs, and more and more companies are asking them to participate in problem-solving teams.

2. **INTRODUCTION**: Ask students to identify problems they have encountered at work and list these on the board. Explain that the lesson focus will be on a problem-solving process and on the team skill STAYING ON TASK. Model the team skill behaviors, verbal and non-verbal, and assign a taskmaster to perform them during the next activity.

3. **PRACTICE**: Guide the class in processing the problem: We don't have much teamwork yet, modeling the use of the Mind Map and Ladder. Set a time period for the process (e.g. 30 minutes). During the Identify, Discover, and Brainstorm segments remind the taskmaster to perform STAYING ON TASK behaviors. Have other students practice using I THINK THAT... and IF/THEN patterns as they give their ideas.

   Guide class in developing a brief evaluation tool for STAYING ON TASK or give them the attached evaluation sheet.

4. **APPLICATION**: Form teams of 4 (intra/interdepartmental or mix of language speakers) to problem-solve in English only. Have teams select a plant-wide problem (e.g. truckers' strike, bad weather machine coverage) and solve it using the model they have learned. Set a time for completion of the task. All team members are to practice STAYING ON TASK, but teams may elect a timekeeper if they choose. At the deadline have teams share their solutions briefly with the class and evaluate their use of the time allotted. If they ran out of time, ask them to identify reasons why.

TEAM SKILL BEHAVIOR SHEET: STAYING ON TASK

STAYING ON TASK:
1. WATCHING THE TIME
2. FOCUSING

LOOKS LIKE

- Checking the time
- Writing a time schedule

SOUNDS LIKE

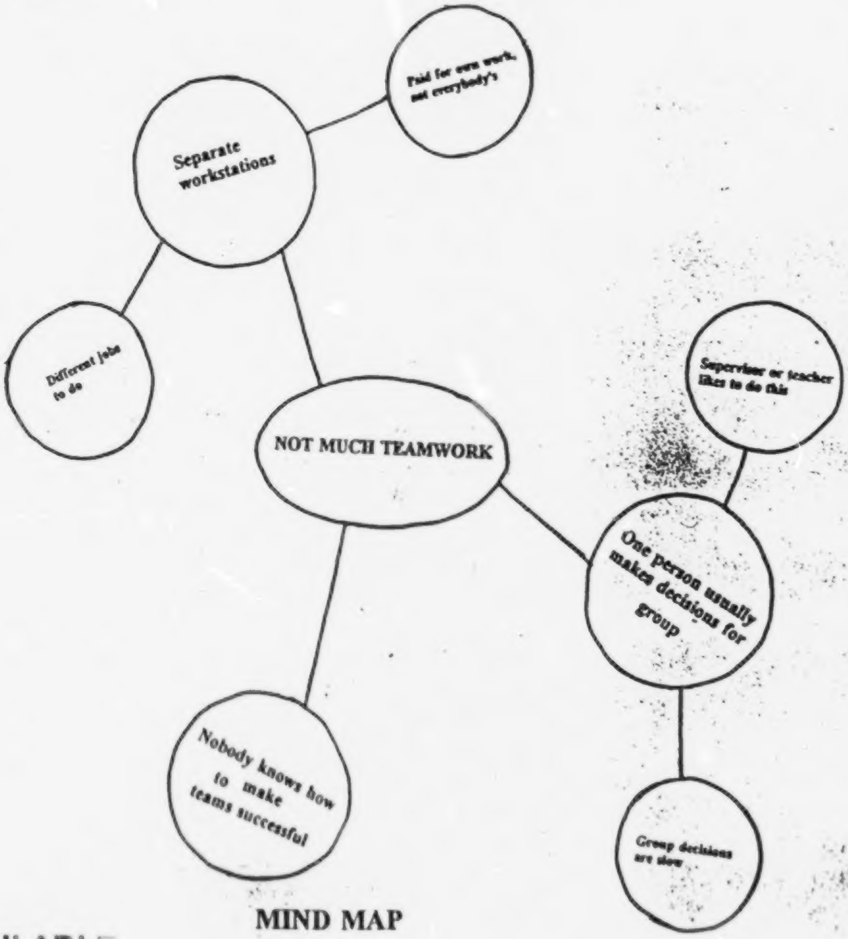
- How much time do we have?
- Can we break this into parts?
- How long shall we spend on each part?
- Let's focus.
- That's a good point, but it's not related.
- How much time is left?

PROBLEM-SOLVING WORKSHEET

1. **Identifying the problem by answering questions:**

a. What is the problem?	**Not much teamwork**
b. Who is involved?	**Everybody in plant**
c. When does it occur?	**During plant meetings, team meetings During classes**
d. Why does it occur?	**See Mind Map below**

2. **Discovering causes:**


Paid for own work, not everybody's
Separate workstations
Different jobs to do
NOT MUCH TEAMWORK
Supervisor or teacher likes to do this
One person usually makes decisions for group
Nobody knows how to make teams successful
Group decisions are slow

MIND MAP

BEST COPY AVAILABLE

3. Brainstorming solutions: Ask each team member to give an idea for solving the problem. Write each idea on the list below. Go around the group giving ideas until all ideas have been given. Vote on the 5 best solutions and circle the letters next to them. Vote on the best 1 of the 5 and underline it. Write the underlined solution on the first step of the ladder and then the other 4 solutions on the other steps. The least important solution should be on step 5 of the ladder.

a. Let friends work together on one job.
b. Let friends sit together in the class.
c. Let hard workers work together.
d. Pay extra for teamwork.
e. Have training in how to make teams successful.
f. Make everybody eat together in the same place.
g. Have a party day and let the workers plan it.
h. Let the workers make more decisions.
i. Let the workers run the plant for a day.
j.
k.
l.
m.

5 ______________________

4 ______________________

3 ______________________

2 ______________________

1 ______________________

LADDER

TEAM SKILL BEHAVIOR EVALUATION SHEET: STAYING ON TASK

Circle YES or NO.

1. My ideas were related to the task.	YES	NO
2. I paid attention the whole time.	YES	NO
3. I helped others focus.	YES	NO
4. Our time divisions were accurate.	YES	NO

Next time we can improve by____

____

____

TEAM MEMBER NAME ______________ **TEAM NAME**____________________

KEY LESSON PLAN: BASIC TECHNICAL MATHEMATICS

TARGET GROUP	ADVANCED VESL, ABE, PRE-GED
WORKPLACE COMPETENCY	Graph x and r on an SPC chart
TECHNICAL AND/OR SUB-TECHNICAL VOCABULARY	Mean, median, mode, range, trend
MATHEMATICS SKILL	Plot and read data on a graph
THINKING SKILL	Associating relationships
TEAM SKILL	Giving explanations
GRAPHIC ORGANIZER	Line graph (from SPC chart)

INSTRUCTIONAL ACTIVITIES

1. **COMPANY CONTEXT:** Employees need to be able to plot points, as well as read others' plotted points, on the graph component of Statistical Process Control (SPC) charts.

2. **INTRODUCTION/PRESENTATION:** Team students and discuss the verbal and non-verbal behaviors of GIVING EXPLANATIONS. Model their use and ask volunteers to use these behaviors in explaining how they got to work on time this morning.

   Provide stick-up notes to each student and have them write down the number of months they have worked at the company (or number of miles travelled to work.) Ask them to form lines in the back of the room according to their numbers (e.g. lines of single digits, tens, twenties, etc.)

   Have teams decide how best to organize and visually present the data on the board. Teams then select one member from each team to give the explanation, using GIVING EXPLANATIONS behaviors. Discuss the accuracy and readability of the student-generated organizers (charts, graphs, etc.). Elicit ideas for other graph designs.

   Review statistical terms of mean, median, mode, and range. Have students consider how the visual representations discussed relate to these statistics.

3. **PRACTICE:** Provide each team with a different set of statistical data (heights, weights, gender data, etc.) and have them create graphs of various types. Discuss the SPC line graph as the company's traditional form of recording statistical data and have them represent each set of data as a line graph.

4. **APPLICATION:** Pair students and have them devise data which might represent their work processes. Encourage them to create data which might signify a general pattern, or trend.

5. **REINFORCEMENT:** Ask students to bring graphs from their jobs or the newspapers to class and have each team select one to interpret for the whole class. Help students associate relationships between occurences and frequencies by carefully examining the graphs. Certain trends should become apparent in this process. First have students note the context of the graph. Then have them focus on data specifics by asking questions that identify patterns: At what points were the occurences at their lowest? At what point were they highest? Is there a range over which the occurences remained constant? Are the occurences higher for the beginning points or the end points? What patterns can we see emerging from the information shown on the graph?

6. **EVALUATION:**
   - Teacher observation of student-generated graphs
   - Student self-evaluation and peer evaluation of GIVING EXPLANATIONS

7. **ATTACHED MATERIALS:**
   - Team Skills Behavior Sheet: Giving Explanations
   - Team Skills Evaluation Sheet: Giving Explanations

TEAM SKILLS BEHAVIOR SHEET: GIVING EXPLANATIONS

LOOKS LIKE

- Standing (optional)
- Making notes or drawings
- Pointing to a visual aid
- Looking at the whole group or at individuals

SOUNDS LIKE

- There are three important things to notice/remember about...
- The first, second, third thing to remember is...
- We decided to handle it this way because...

TEAM SKILLS EVALUATION SHEET: GIVING EXPLANATIONS

Circle YES or NO:

1.	I spoke clearly.	YES	NO
2.	I explained using steps or points to remember.	YES	NO
3.	I used a visual aid.	YES	NO
4.	I pointed to the visual one or more times.	YES	NO
5.	I looked at the group as I talked.	YES	NO

Circle ALL, SOME, or NONE:

1.	Others spoke clearly	ALL	SOME	NONE
2.	They explained using steps or points to remember.	ALL	SOME	NONE
3.	They used visual aids.	ALL	SOME	NONE
4.	They pointed to a visual one or more times.	ALL	SOME	NONE
5.	They looked at the group as they talked.	ALL	SOME	NONE

We can improve next time by____

KEY LESSON PLAN: READING

TARGET GROUP	ADVANCED ESL (SPL VII+), ABE, PRE-GED
Workplace Competency	Uses Table of Contents to locate information in a procedures or quality assurance manual
Sub-technical Vocabulary	Document, system, sub-system, purpose, scope, procedures, responsibility
Reading Skill	Locates information within a text
Thinking Skill	Sequencing
Team Skill	Taking roles
Graphic Organizer	Flowchart

INSTRUCTIONAL ACTIVITIES

1. **COMPANY CONTEXT:** Companies want employees to be able to access information from procedures and quality assurance manuals. Many employees do not have the technical reading skills to do so.

2. **INTRODUCTION/PRESENTATION:** Ask students which company manuals they refer to (if any) and what at types of information they look for. Ask what kinds of difficulties they encounter in finding information in technical manuals. Model the use of a flow chart to analyze the steps in looking for a new car. Define the team roles of Cheerleader, Checker, Taskmaster, and Gatekeeper and explain that each team will divide up the roles in the next activity.

3. **PRACTICE:** Team students in groups of four and have each team member select a role. Provide a number of references (dictionary, bilingual dictionary, farmer's almanac, atlas, etc.) and an information search task for each. Have each team select a reference to search and ask them to flow chart the steps they take. Set a time limit for this activity. Allow time for each group to share briefly the results of its search and the steps taken to find the desired information. Discuss any differences in the way each resource is organized and any problems encountered in using it. Have teams report on the success of TAKING ROLES during the activity.Provide each team with a procedures or quality assurance manual and define the sub-technical vocabulary they will need to talk about its divisions.

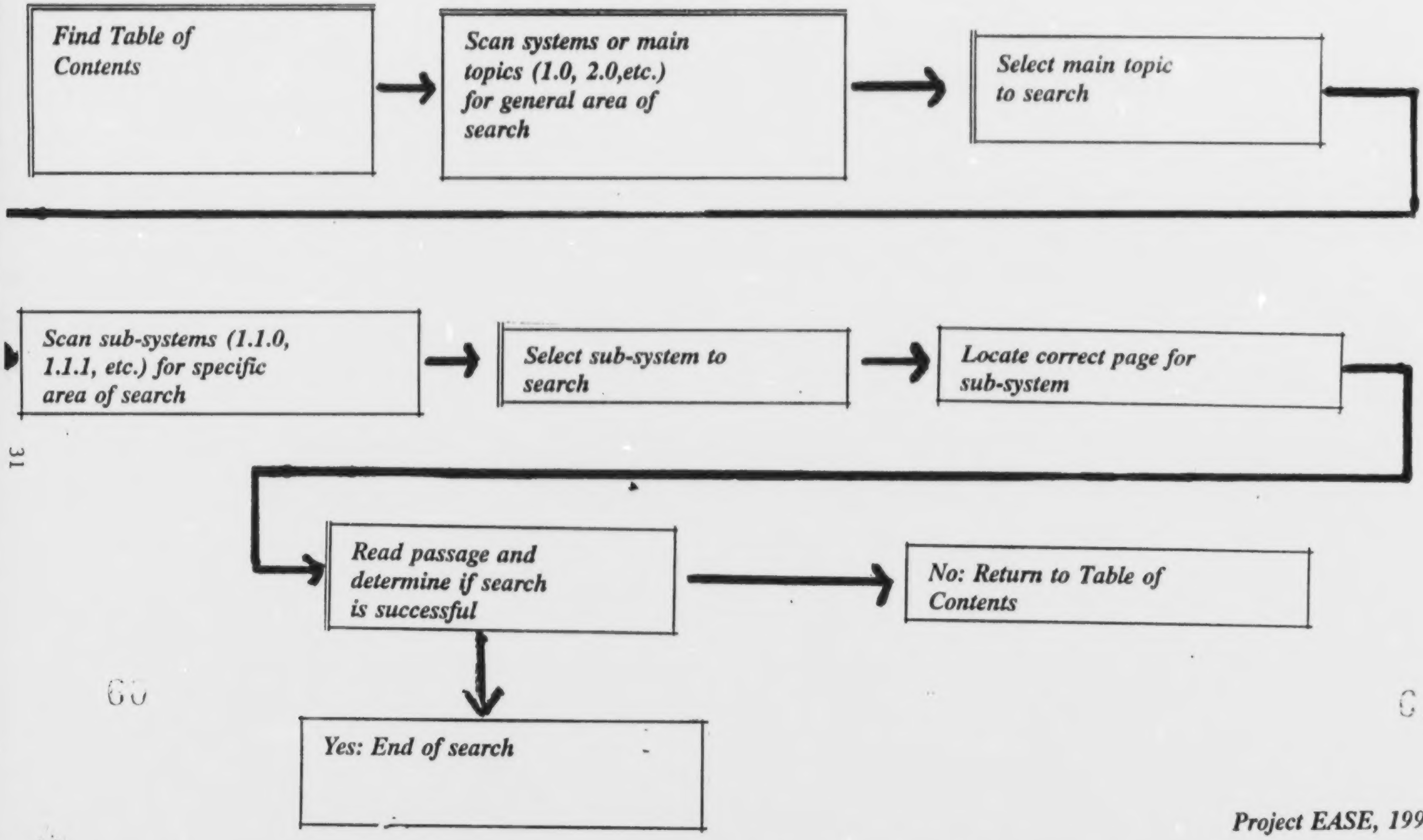
4. **APPLICATION:** Ask the students what kinds of information they might want/need to find in a company manual and record these on the board. Allow each team to select either a company manual on procedures or a quality assurance manual and to search for one of the items listed. Set a task deadline and have them practice TAKING ROLES while recording the steps of their search on another flow chart. Allow time for a brief sharing of steps and how they differ from those used for the more general references.

5. **EVALUATION:**
   - Teacher observation of flow charting
   - Self and team evaluation of TAKING ROLES

6. **ATTACHED MATERIALS:**

   - Sample Flowchart/Sequence: Technical Table of Contents
   - Group Skills Evauation: Taking Roles

SAMPLE FLOW CHART/SEQUENCE: TECHNICAL TABLE OF CONTENTS


Find Table of Contents
Scan systems or main topics (1.0, 2.0,etc.) for general area of search
Select main topic to search
Scan sub-systems (1.1.0, 1.1.1, etc.) for specific area of search
Select sub-system to search
Locate correct page for sub-system
Read passage and determine if search is successful
No: Return to Table of Contents
Yes: End of search

Project EASE, 1994

GROUP SKILLS EVALUATION: TAKING ROLES

Circle your response.

	Always	Often	Sometimes	Never
We showed appreciation for the contributions of each member (Cheerleader).	4	3	2	1
We made sure everyone understood the task and the lesson (Checker).	4	3	2	1
We stayed on task (Taskmaster).	4	3	2	1
We made sure everyone participated and that sharing was balanced (Gatekeeper).	4	3	2	1

Areas for improvement:

LESSON PLAN: ENGLISH AS A SECOND LANGUAGE

TARGET GROUP	
Workplace Competency	
Technical and/or Sub-technical Vocabulary	
Grammatical Patterns	
Thinking Skills	
Team Skills	
Graphic Organizers	

INSTRUCTIONAL ACTIVITIES

1. **COMPANY CONTEXT:**

2. **INTRODUCTION/PRESENTATION:**

3. **PRACTICE:**

4. **APPLICATION:**

5. **REINFORCEMENT:**

6. **EVALUATION:**

7. **ATTACHED MATERIALS:**

LESSON PLAN: BASIC TECHNICAL MATHEMATICS

TARGET GROUP	
Workplace Competency	
Technical and/or Sub-technical Vocabulary	
Mathematics Skill	
Thinking Skill	
Team Skill	
Graphic Organizer	

INSTRUCTIONAL ACTIVITIES

1. COMPANY CONTEXT:

2. INTRODUCTION/PRESENTATION:

3. PRACTICE:

4. APPLICATION:

5. REINFORCEMENT:

6. EVALUATION:

7. ATTACHED MATERIALS:

LESSON PLAN: BASIC TECHNICAL READING

TARGET GROUP	
Workplace Competency	
Technical and/or Sub-technical Vocabulary	
Reading Skill	
Thinking Skill	
Team Skill	
Graphic Organizer	

INSTRUCTIONAL ACTIVITIES

1. COMPANY CONTEXT:

2. INTRODUCTION/PRESENTATION:

3. PRACTICE:

4. APPLICATION:

5. REINFORCEMENT:

6. EVALUATION:

7. ATTACHED MATERIALS:

Appendix E

Sample Customized Assessment Instruments

Draft

PROJECT EASE

Basic Workplace ESL Oral Proficiency Assessment

For Precision Metal Industry

Northern Illinois University
Office of Applied Innovations

Name:____

Employer:____

Date:____

Draft

([illegible])

Project EASE
Workplace ESL Proficiency Test

ORAL INTERVIEW

Score

			0	1	2	3
1.	What's your name?	1.	☐	☐	☐	
2.	Could you spell it, please?	2.	☐	☐	☐	
	Where are you from?	3.	☐	☐	☐	
4.	Where do you live now?	4.	☐	☐	☐	
5.	How long have you lived in the U.S.?	5.	☐	☐	☐	
6.	Do you like living in______? Why?	6.	○	○	○	○
7.	How did you come to work today?	7.	☐	☐	☐	
8.	When do you start work each day?	8.	☐	☐	☐	

Indicate digital clocks.

9.	Which one shows five-fifteen?	9.	△	△		

Point to clock showing 5:30.

10.	What time is it?	10.	☐	☐	☐	

Indicate analogue clocks.

11.	Which one shows five-forty-five?	11.	△	△		
12.	What time did you wake up today?	12.	☐	☐	☐	
13.	What department do you work in?	13.	☐	☐	☐	
14.	What is your job?	14.	☐	☐	☐	
15.	Do you like your job? Why?	15.	○	○	○	○
16.	What do you do on your job as a ____________________?	16.	○	○	○	○
17.	If you have a problem with your job, who can you ask for help?	17.	☐	☐	☐	☐
18.	What question can you ask?	18.	☐	☐	☐	☐

Point to photo of factory with a machine operator, materials handler, janitor, supervisor.

19.	Where are these people?	19.	☐	☐	☐	
20.	What are they doing?	20.	☐	☐	☐	

			Score 0	1	2	3
21.	Can you tell me more?	21.	○	○	○	○

Indicate factory floor plan. Say, "This is a factory. These are aisles, hallways, machines, rooms, "etc."Do you understand?" Repeat, if necessary.

Say: "I'm going to give you directions. Follow them with your finger like this..."

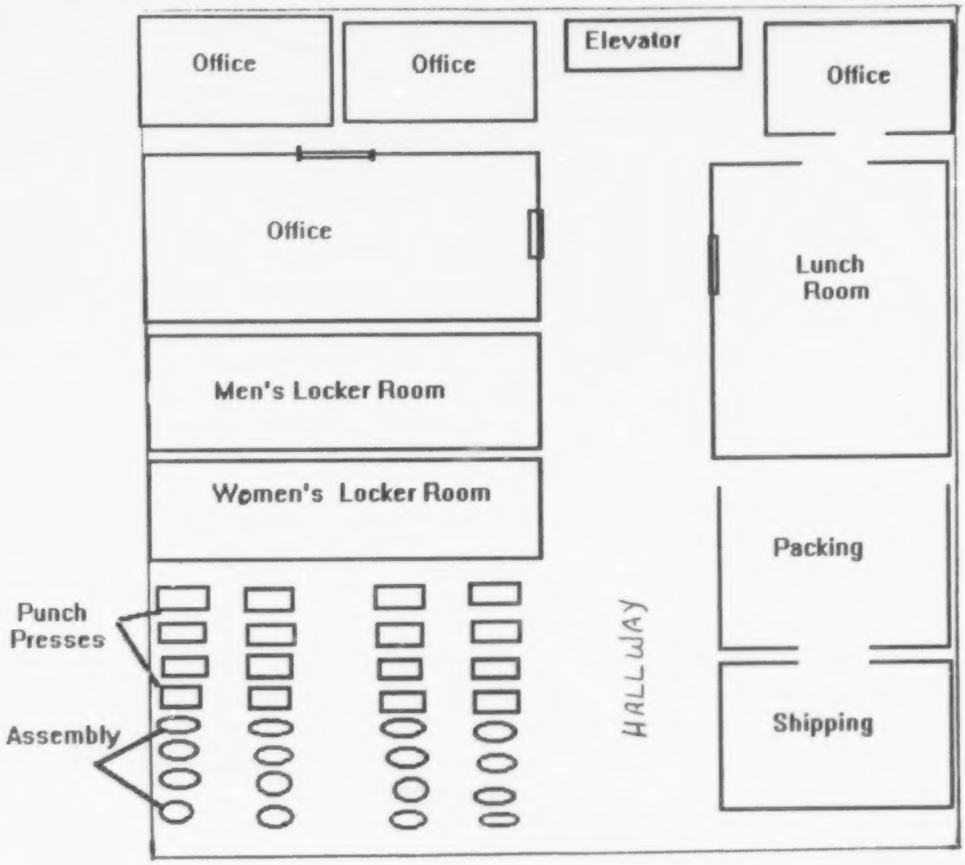
			0	1	2	3
22.	Go to the end of assembly and turn right	22.	△	△		
23.	Go to the hallway and turn left.	23.	△	△		
24.	Go past the punch presses, past the locker rooms, to the next hallway. Turn right and go into the door on the left.	24.	△	△		
25.	If you want to go to Personnel, what question can you ask?	25.	☐	☐	☐	
26.	Is working in (your country) and the United States the same? How is it the/same different?	26.	○	○	○	○

SIGNS		**PICTURES**	2	3
27.	(Point) Which are the safety glasses?	safety glasses/drinking glasses/ safety belt/dark sunglasses	○	○
28.	(Point) Which is the fire extinguisher?	fire extinguisher/fireman/matches/machine	○	○
29.	(Point to KEEP OUT.) Which one?	supply area with closed, chained gate/ outdoors/cafeteria/vending machine	○	○

CALLING IN SICK

Pictures: adult on telephone-has the flu/sick child to care for/man with backache/woman with broken arm

			0	1	2	3
30.	Which one hurt his back?	30.	△	△		
31.	What happened to her? (broken arm)	31.	☐	☐	☐	☐
32.	What's he saying? (flu-telephone)	32.	☐	☐	☐	☐
33.	What do you do when you get sick?	33.	○	○	○	○
34.	If this is you, what do you say when you call work? (adult-flu)	34.	○	○	○	○
35.	If this is you, what do you say when you call work? (sick child to care for)	35.	○	○	○	○


Office
Office
Elevator
Office
Office
Lunch Room
Men's Locker Room
Women's Locker Room
Packing
Punch Presses
Assembly
HALLWAY
Shipping

BEST COPY AVAILABLE

			Score			
			0	1	2	3
36.	If this is you, what do you say then you call work? (backache)	36	○	○	○	○

DESCRIBING ACCIDENTS

Photos: Lifting, back injury/cut hand in machine, with witness visible, number visible on machine

37.	Point to picture of back injury. What happened?	37.	○	○	○	○
38.	In your estimation, was the employee at fault?	38.	☐	☐	☐	
39.	Do you think the worker was wrong? Why?	39.	○	○	○	○
40.	Point to picture of hand injury. What happened?	40.	○	○	○	○
41.	Point to picture of hand injury. What should this person do?	41.	○	○	○	○
42.	Indicate number on machine. What is the # on the machine?	42.	☐	☐	☐	
43.	(Test-giver repeats incorrectly.) Test-taker corrects the error.	43.	☐	☐	☐	

Photos: Machine operator/forklift driver/office worker/janitor.

44.	Point to forklift driver. What's this job?	44.	☐	☐	☐	
45.	Point to machine operator. What is she doing?	45.	☐	☐	☐	
46.	Which job would you like?	46.	☐	☐	☐	
47.	Why?	47.	○	○	○	○

Please fill out this form.

48.	Name	48.	○	○
49.	Address	49.	○	○
50.	Sign here	50	○	○

Draft

PROJECT EASE

Basic Workplace Reading Assessment

For Precision Metal Industry

Northern Illinois University
Office of Applied Innovations

Name:____

Employer:______________________________________

Date:____

Draft

PROJECT EASE

Basic Workplace Reading Assessment

For Precision Metal Industry

Northern Illinois University
Office of Applied Innovations

Name:____

Employer:______________________________________

Date:____

Draft

([illegible])

Project EASE
Workplace ESL Proficiency Test

ORAL INTERVIEW

			Score			
			0	1	2	3
1.	What's your name?	1.	☐	☐	☐	
2.	Could you spell it, please?	2.	☐	☐	☐	
.	Where are you from?	3.	☐	☐	☐	
4.	Where do you live now?	4.	☐	☐	☐	
5.	How long have you lived in the U.S.?	5.	☐	☐	☐	
6.	Do you like living in______?Why?	6.	○	○	○	○
7.	How did you come to work today?	7.	☐	☐	☐	
8.	When do you start work each day?	8.	☐	☐	☐	
Indicate digital clocks.						
9.	Which one shows five-fifteen?	9.	△	△		
Point to clock showing 5:30.						
10.	What time is it?	10.	☐	☐	☐	
Indicate analogue clocks.						
11.	Which one shows five-forty-five?	11.	△	△		
12.	What time did you wake up today?	12.	☐	☐	☐	
13.	What department do you work in?	13.	☐	☐	☐	
14.	What is your job?	14.	☐	☐	☐	
15.	Do you like your job? Why?	15.	○	○	○	○
16.	What do you do on your job as a ____________?	16.	○	○	○	○
17.	If you have a problem with your job, who can you ask for help?	17.	☐	☐	☐	☐
18.	What question can you ask?	18.	☐	☐	☐	☐
Point to photo of factory with a machine operator, materials handler, janitor, supervisor.						
19.	Where are these people?	19.	☐	☐	☐	
20.	What are they doing?	20.	☐	☐	☐	

			Score 0	1	2	3
21.	Can you tell me more?	21	○	○	○	○

Indicate factory floor plan. Say, "This is a factory. These are aisles, hallways, machines, rooms, "etc."Do you understand?"Repeat, if necessary.

Say: "I'm going to give you directions. Follow them with your finger like this..."

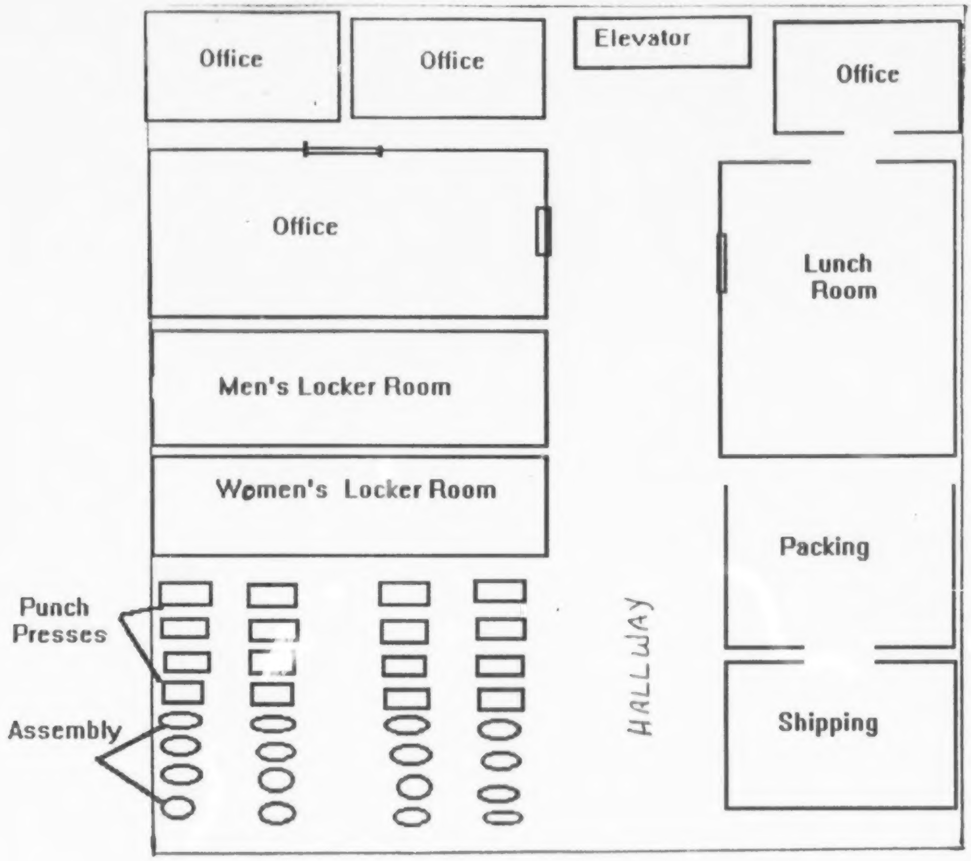
			0	1	2	3
22.	Go to the end of assembly and turn right.	22.	△	△		
23.	Go to the hallway and turn left.	23.	△	△		
24.	Go past the punch presses, past the locker rooms, to the next hallway. Turn right and go into the door on the left.	24.	△	△		
25.	If you want to go to Personnel, what question can you ask?	25.	☐	☐	☐	
26.	Is working in (your country) and the United States the same? How is it the/same different?	26.	○	○	○	○

	SIGNS	**PICTURES**		
27.	(Point) Which are the safety glasses?	safety glasses/drinking glasses/ safety belt/dark sunglasses	○	○
28.	(Point) Which is the fire extinguisher?	fire extinguisher/fireman/matches/machine	○	○
29.	(Point to KEEP OUT.) Which one?	supply area with closed, chained gate/ outdoors/cafeteria/vending machine	○	○

CALLING IN SICK

Pictures: adult on telephone-has the flu/sick child to care for/man with backache/woman with broken arm

			0	1	2	3
30.	Which one hurt his back?	30.	△	△		
31.	What happened to her? (broken arm)	31.	☐	☐	☐	☐
32.	What's he saying? (flu-telephone)	32.	☐	☐	☐	☐
33.	What do you do when you get sick?	33.	○	○	○	○
34.	If this is you, what do you say when you call work? (adult-flu)	34.	○	○	○	○
35.	If this is you, what do you say when you call work? (sick child to care for)	35.	○	○	○	○


Office
Office
Elevator
Office
Office
Lunch Room
Men's Locker Room
Women's Locker Room
Packing
Punch Presses
HALLWAY
Shipping
Assembly

				Score		
			0	1	2	3
36.	If this is you, what do you say then you call work? (backache)	36	○	○	○	○

DESCRIBING ACCIDENTS

Photos: Lifting, back injury/cut hand in machine, with witness visible, number visible on machine

37.	Point to picture of back injury. What happened?	37	○	○	○	○
38.	In your estimation, was the employee at fault?	38.	☐	☐	☐	
39.	Do you think the worker was wrong? Why?	39.	○	○	○	○
40.	Point to picture of hand injury. What happened?	40.	○	○	○	○
41.	Point to picture of hand injury. What should this person do?	41.	○	○	○	○
42.	Indicate number on machine. What is the # on the machine?	42.	☐	☐	☐	
43.	(Test-giver repeats incorrectly.) Test-taker corrects the error.	43.	☐	☐	☐	

Photos: Machine operator/forklift driver/office worker/janitor.

44.	Point to forklift driver. What's this job?	44.	☐	☐	☐	
45.	Point to machine operator. What is she doing?	45	☐	☐	☐	
46.	Which job would you like?	46.	☐	☐	☐	
47.	Why?	47.	○	○	○	○

Please fill out this form.

48.	Name	48.	○	○
49.	Address	49.	○	○
50.	Sign here	50	○	○

D. 74

PROJECT EASE

Basic Workplace ESL Oral Proficiency Assessment

For Precision Metal Industry

Northern Illinois University
Office of Applied Innovations

Name:____

Employer:______________________________________

Date:____

Work Schedules

Work schedules tell workers when they have to do certain kinds of work. The schedule below is for the shipping department. Use the schedule to answer the questions.

ABC Manufacturing Shipping Work Schedule
for Feb. 11-17

	Day Shift 8 a.m.-4 p.m.	Swing Shift 4 p.m.-12 mid.	Graveyard Shift 12 mid.-8 a.m.
Su	———	———	———
M	Carlos	John	Trang
T	John	Carlos	Trang
W	Carlos	John	Trang
Th	John	Carlos	Trang
F	Carlos	John	Trang
Sa	———	———	———

1. What week is this work schedule for?____________________

2. Who works the same shift every day?____________________

3. When does John work the day shift?____________________

4. How many days does Carlos work the swing shift?____________________

5. Does any worker work two shifts in a row?____________________

6. Does any worker work on Saturday or Sunday?____________________

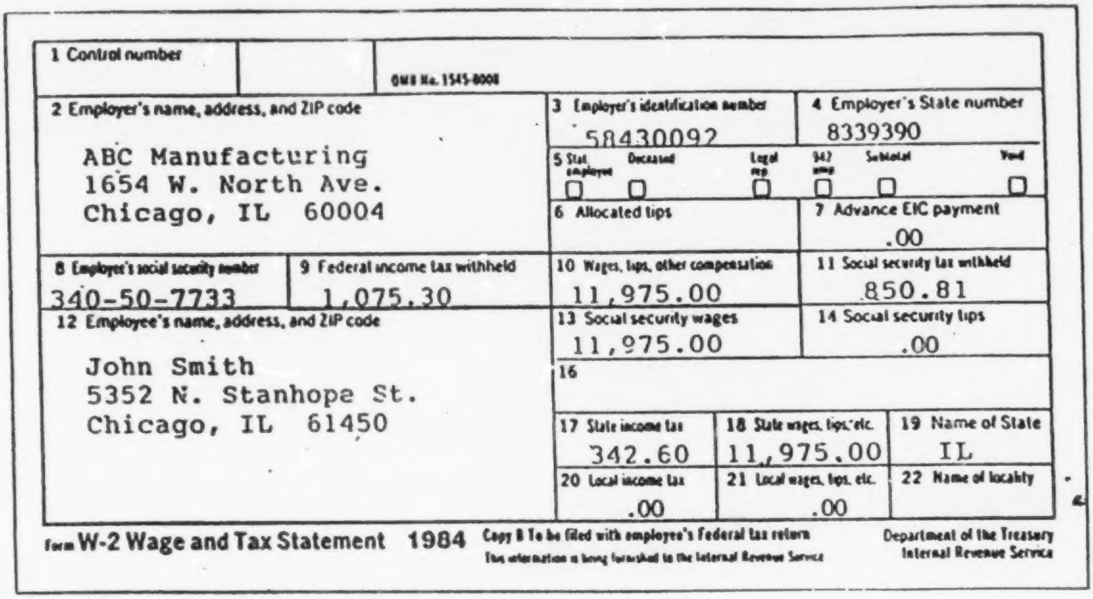
7. What time is the graveyard shift?____________________

8. What shift does John work on Wednesday?____________________

9. What shift would you prefer to work and why?____________________

W-2 Forms

The W-2 form is a statement from your employer telling you how much money you earned during the year, and how much was withheld from your checks. Use the sample W-2 form below to answer the questions.



1 Control number

OMB No. 1545-0008

2 Employer's name, address, and ZIP code

ABC Manufacturing
1654 W. North Ave.
Chicago, IL 60004

3 Employer's identification number 58430092

4 Employer's State number 8339390

5 Stat. employee ☐ Deceased ☐ Legal rep. ☐ 942 emp. ☐ Subtotal ☐ Void ☐

6 Allocated tips

7 Advance EIC payment .00

8 Employee's social security number 340-50-7733

9 Federal income tax withheld 1,075.30

10 Wages, tips, other compensation 11,975.00

11 Social security tax withheld 850.81

12 Employee's name, address, and ZIP code

John Smith
5352 N. Stanhope St.
Chicago, IL 61450

13 Social security wages 11,975.00

14 Social security tips .00

16

17 State income tax 342.60

18 State wages, tips, etc. 11,975.00

19 Name of State IL

20 Local income tax .00

21 Local wages, tips, etc. .00

22 Name of locality

Form **W-2 Wage and Tax Statement 1984** Copy B To be filed with employee's Federal tax return
This information is being furnished to the Internal Revenue Service

Department of the Treasury
Internal Revenue Service

10. How much were John's wages in 1984?____________________

11. How much federal income tax was withheld?____________________

12. How much state tax was withheld?____________________

13. How much Social Security was withheld?____________________

14. What is John's Social Security number?____________________

Understanding Pay Stubs

The stub attached to a paycheck tells you how much money you earned for that pay period and how much was withheld. Often, it also tells how much money you have made and how much has been withheld so far that year.

Use the sample pay stub below to answer the questions.

NAME: John Smith

Regular Hours	Overtime Hours	Regular Pay	Overtime Pay	Gross Pay	Period Ending
80	10	640.00	120.00	760.00	2/25/84

Deductions This Pay Period

Fed. With. Tax.	F.I.C.A.	State Tax	Insurance	Union Dues
114.00	82.50	54.25	12.50	00.00

Gross Pay	Net Pay
760.00	496.75

Earnings This Pay Period

Gross Pay	Fed. Tax.	F.I.C.A.	State Tax	Insurance	Union Dues
3040.00	456.00	330.00	217.00	50.00	00.00

Year-To-Date Totals

15. In the current pay period, how many regular hours did John work?________________

16. In the current pay period, what was his regular pay?________________

17. In the current pay period, how much did he pay in Social Security?________________

18. In the current pay period, what was his take-home pay?________________

19. What was the last day of the pay period?________________

20. How much has he paid in federal tax so far this year?________________

21. How much has he earned so far this year before taxes?________________

Prototype Technician
Evaluation Sheet

Name:______________________________________ Date:____________________

22. Question One: you have been given the following work orders (table one). Schedule them in the order that would meet the due date.

Table One

Order	Work Order #	Issue Date	Due Date
	701	7/1/93	7/7/93
	702	7/1/93	7/1/93
	703	7/2/93	7/7/93
	704	7/6/93	7/6/93
	705	7/13/93	7/22/93
	706	7/15/93	7/16/93

Locating Information

At times, you will need to get information from a handbook or manual. There is a good way to get the information you need without flipping through the entire book. Knowing how to use the front and back parts of a book to find information is useful in the workplace. The following table of contents might be found in an employees' benefits handbook. Scan the table; then answer the questions on the next page.

Table of Contents

Introduction	1
Employee Rights	3
Pay: Illness, Vacation, and Other Absences	7
Health Plan	10
Dental and Vision Assistance	17
School Tuition	22
Pension Benefits	24
Appendix	35
Glossary	41
Index	45

Directions: Choose the number of the best answer for each question. (If you are using the Pre-Test Answer Sheet, write your answer in the space provided.)

27. How many topics are covered in the handbook?

    (1) three
    (2) six
    (3) ten

28. What section would contain information about sick leave?

    (1) Pay: Illness, Vacation, and Other Absences
    (2) Health Plan
    (3) Employee Rights

29. What section would discuss what employees can expect when they retire from the company?

    (1) Introduction
    (2) Health Plan
    (3) Pension

30. What section would you consult if you had a tooth pulled?

    (1) Glossary
    (2) Dental and Vision Assistance
    (3) Pay: Illness, Vacation, and Other Absences

31. What section would discuss medical insurance?

    (1) Index
    (2) Employee Rights
    (3) Health Plan

Diagrams, charts, graphs, and tables are often used in the workplace. Sometimes, a picture is easier for an employee to follow than a procedure that is written in words. An example of a flowchart is on this page. Read the chart; then answer the questions on the next page.

Emergency Leader

The **Personal-Care Health Plan (PCH)** allows freedom of choice statewide and worldwide. You can choose from more than

- 25,000 doctors • 180 hospitals • 1,000 pharmacies
- 12,000 allied health care professionals

PCH covers traditional *and* nontraditional health services such as chiropractic and acupuncture services.

After your annual deductible ($200/single, $400/family), you pay only 10 to 40 percent of the fee for the medical care service performed. Monthly payment: Employee only: $150; employee + 1 dependent: $275; employee + 2 or more dependents: $375

The **KIM Foundation Health Plan** provides all traditional medical care. No deductibles. No additional charges for physician care, hospital services, x-ray and lab tests, ambulance, emergency care, mental health services, or physical therapy. Only $2 fee per prescription. Monthly payment: employee only: $105; employee + 1 dependent: $200; employee + 2 or more dependents: $275

You can choose from more than 3,000 KIM hospital doctors and other health care providers. KIM has 15 hospitals and 45 outpatient offices in the state. Emergency services and medical advice by phone are available 24 hours.

Directions: These sentences are about the flowchart. If the statement is true, write T. If the statement is false, write F and rewrite the statement to make it correct.

32. ______ The purpose of the flowchart is to show what the emergency leaders must do when a fire breaks out at work.

33. ______ Leaders call the fire department after they have left their floor.

34. ______ The emergency leader leads everyone on his or her floor to the assigned safe place.

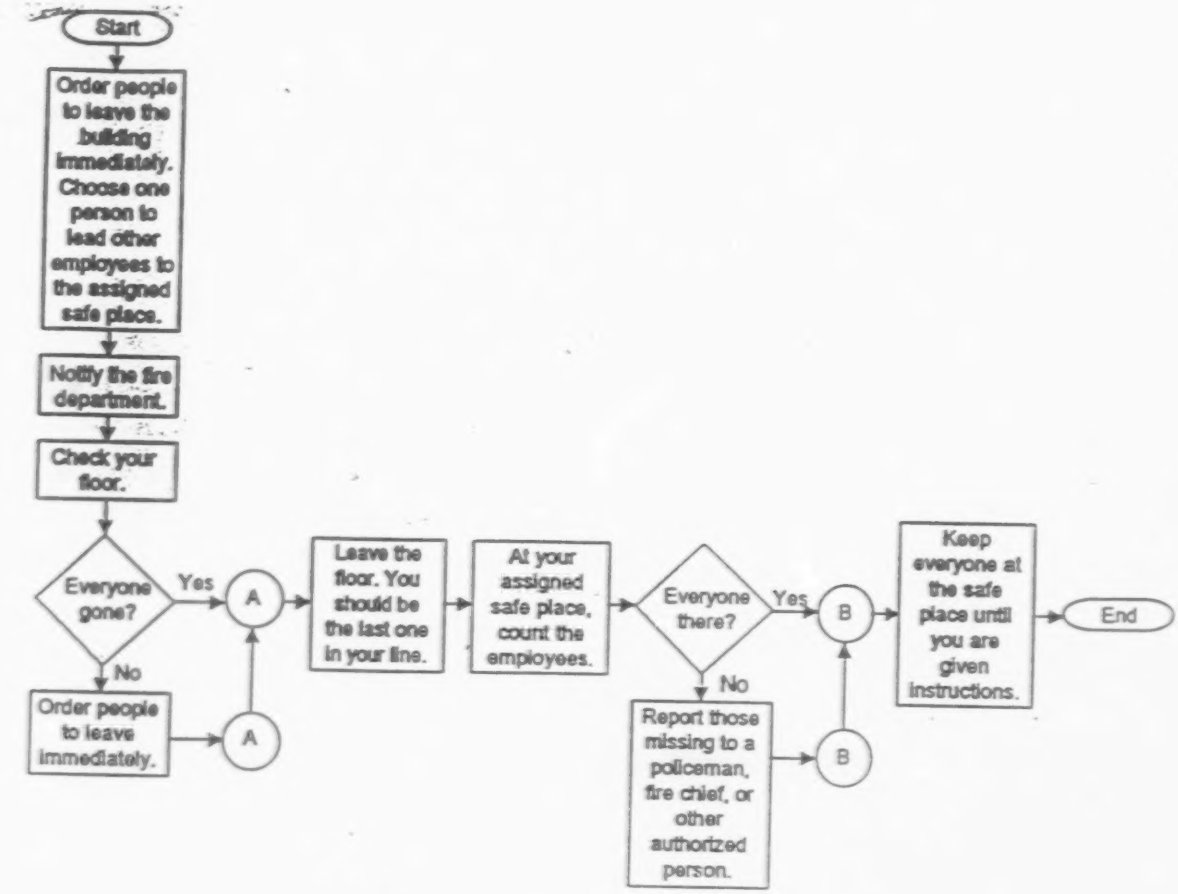
35. ______ Before leaving the floor, the leader makes sure that everyone knows about the fire and is leaving the floor.

36. ______ The emergency floor leader must know how many employees are on his or her floor.

37. ______ If an emergency floor leader knows that an employee is at work but is not at the safe place, he or she must go back for the employee.

38. ______ Once everyone is accounted for at the safe place, the leader can tell everyone in his or her group to go home.

Another reading skill you'll use often on the job is comparing and contrasting information. Suppose, for example, you need to choose between two health plans at your workplace. The ability to compare and contrast the two, finding their strengths and weaknesses, can help you make the better choice. Read about the two health plan; then answer the questions.


Start
Order people to leave the building immediately. Choose one person to lead other employees to the assigned safe place.
Notify the fire department.
Check your floor.
Everyone gone?
Yes
No
Order people to leave immediately.
A
A
Leave the floor. You should be the last one in your line.
At your assigned safe place, count the employees.
Everyone there?
Yes
No
Report those missing to a policeman, fire chief, or other authorized person.
B
B
Keep everyone at the safe place until you are given instructions.
End

Directions: These sentences are about the two health plans. If the statement is **true,** write T. If the statement is false, write **F** and **rewrite** the statement to make it correct. (If you are using the Pre-Test Answer Sheet, write your answers in the spaces provided.)

39. _____ Both health plans allow you to choose your own doctor.

____

40. _____ Both health plans cover chiropractic services.

____

41. _____ Both plans have a deductible.

42. _____ Both plans have health care professionals throughout the United States.

____

43. _____ On the PCH Plan, you would pay some amount for your doctor's visit.

44. _____ On the KIM Foundation Health Plan, you could talk to a doctor on the phone at two o'clock in the morning.

____

45. _____ The KIM Foundation Health Plan charges 10 percent for every prescription.

____

46. _____ The PCH Pan offers more hospital choices than the KIM Foundation Health Plan.

47. _____ The PCH Plan costs more than the KIM Foundation Health Plan.

____

At many jobs, workers must do some reading to perform their tasks. Sometimes, they must refer to handbooks and manuals to learn company policies or procedures.

The following passage is similar to text you might find in an employees' handbook in the workplace. Read the passage; then answer the questions on the next page.

WORK HOURS

For most company employees, a regular workweek is 40 hours. The workweek begins on Monday and ends on Sunday. Work hours are from 7:00 A.M. to 5:00 P.M. Employees shall arrange their work schedule with their supervisor.

Break Policy

All employees are required to take two 15 minute paid breaks. One break may be taken in the morning and another in the afternoon. Employees must also take a lunch break. The company permits a 30 minute lunch break to be taken between 11:30 A.M. and 1:00 P.M. (The company does not compensate employees for the lunch break.) Employees many not give up any of their breaks to be dismissed early from work.

Overtime Policy

The company may request employees to work beyond their regular schedule. Non-exempt employees who work more than 40 hours in a week will receive overtime (OT) pay. Exempt employees--those who fall into the executive, administrative, and professional classifications--do 'not' qualify for OT. The rate for OT is equivalent to one and one half times an employee's regular wages.

Questions: **True or False**

48. _____ Employees may work any hours they choose between 7:00 A.M. and 5:00 P.M., as long as they work 8 hours.

49. _____ If an employee works from 7:00 A.M. until 3:30 P.M. she is paid for 8 1/2 hours of work.

50. _____ An employee who starts lunch at 12:30 P.M. must return to work at 1:00 P.M.

51. _____ An employee who must leave work 15 minutes earthly for a doctor's appointment should skip the morning break in order to be paid for 8 hours or work.

52. _____ The company can ask the employee to work more than 40 hours a week

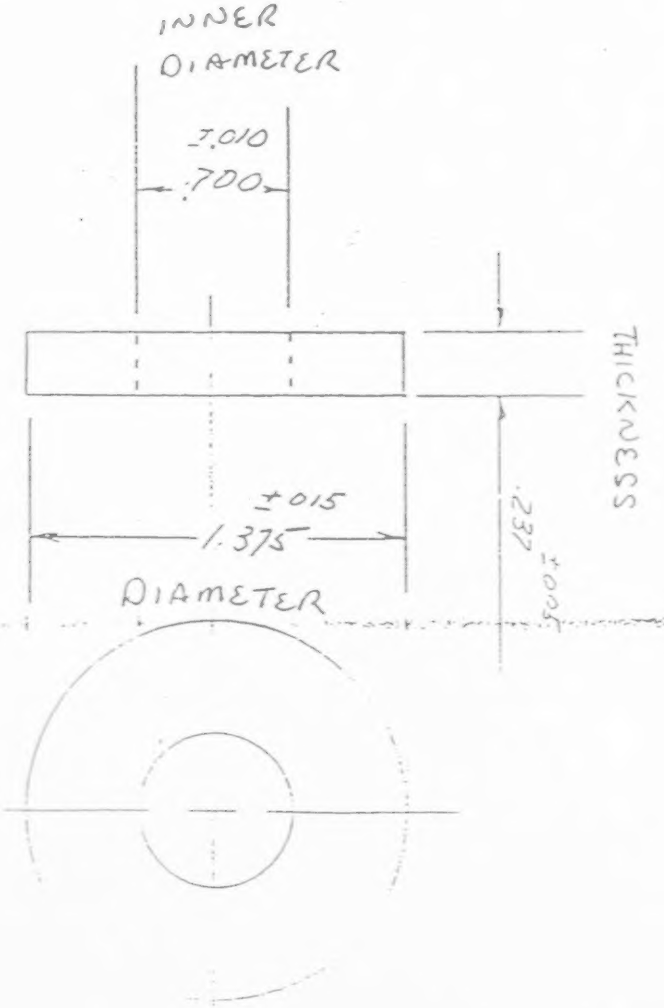
53. _____ Some employees are not paid extra for working overtime.

Refer to the drawing below to answer the following questions:

38. What is the maximum acceptable diameter? ____________________

39. What is the maximum acceptable thickness? __________________

40. If you were given a part with a diameter of 1.040 would this part be accepted or rejected? _______________


INNER DIAMETER
±.010
.700
±.015
1.375
DIAMETER
THICKNESS
.237 ±.005

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Draft

PROJECT EASE

Basic Workplace Mathematics Assessment

For Precision Metal Industry

Northern Illinois University
Office of Applied Innovations

*Name:*____

*Employer:*______________________________________

*Date:*____

Draft

PROJECT EASE

Basic Workplace Mathematics Assessment

For Precision Metal Industry

Northern Illinois University
Office of Applied Innovations

Name:____

Employer:______________________________________

Date:____

Choose the larger decimal fraction in each pair.

1. .711 or .72

2. .008 or .0008

Choose the larger fraction in each pair.

3. 2/3 or 9/12

4. 1/5 or 1/3

Choose the pair of equal fractions in each group.

5. 2/6 1/3 3/12

6. 1/8 3/18 1/6

Express the following percents as a decimal or fraction as indicated.

7. 75% = ______________(fraction)

8. 35% = ______________(decimal)

Perform the appropriate operation.

9. 60.375 + 2.225

10. 1/2 2 =

11. 2/3x4 =

12. What is 60% of 2,000?

13. 50 is 1/3 of what number?

14. 14 is what percent of 50?

Write in numerical form using a decimal point:

15. Three tenths: ____________

16. Twenty-five hundreths: _____________

17. Four thousendths: ______________

Round off to two decimal places:

18. 4.568: __________

Add:

19. .34 + .37

READ CAREFULLY THE FOLLOWING PROBLEMS AND ANSWER AS DIRECTED

20. The diameters of two holes are .248 inches and .208 inches. The difference in their diameters is:

a. 4/10 inch
b. 3/5 inch
c. 1/2 inch
d. 4/100 inch

21. If 840 parts can be made in 4 hours, how many parts can be made in twelve hours?

a. 210 parts
b. 2.520 parts
c. 5,200 parts
d. 4,000 parts

22. Julia packed 12 boxes on the skid. Each box has 2 speakers in it. How many speakers were packed in total? _______________

23. Rosa cut 5 inches off a board that was 19 inches long. How long is the board now? ____________

You have been given five plates. The diameters are: 2.05", 1.06:, 1.055", 1.061" and 1.04". Answer the following:

24. What is the average diameter? ____________________

25. What is the largest diameter? ____________________

26. What is the smallest diameter? ____________________

27. Four spacers measuring .015, .005, .012, and .025 inches are to be replaced with one solid spacer. The thickness of this spacer would be:

a. .057 inches
b. .570 inches
c. .047 inches
d. .024 inches

28. You worked 40 hours at a rate of $5.60 per hour. The amount of money you made is:

a. $172
b. $224
c. $22
d. $400

(continue to the next page)_

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LOOK AT THE STATISTICAL PROCESS CONTROL CHART ON THE NEXT PAGE

29. Add the column of numbers.______________________

30. Determine the average: ______________________________

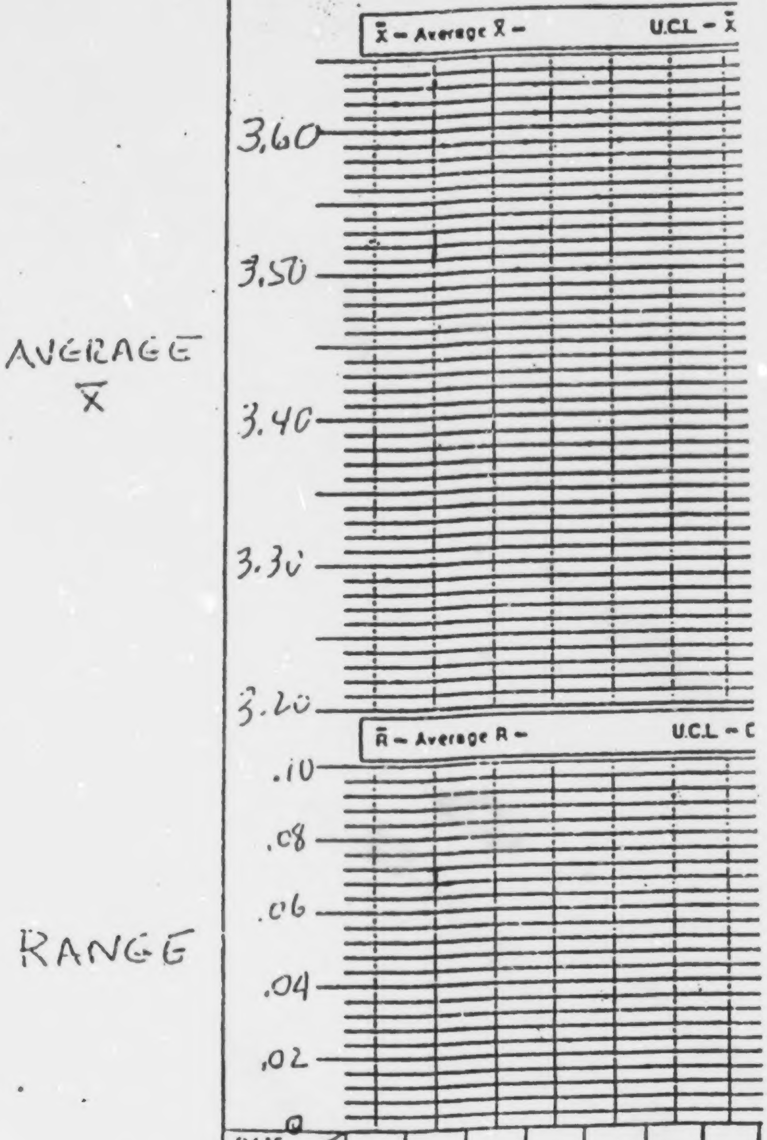
31. Determine range highest - lowest:____________________________

32. Plot average on XbarR chart and range on range chart.

DEPT.

MACH. NO.

DATES



DATE / TIME								
READINGS	1		3.50					
	2		3.51					
	3		3.57					
	4		3.51					
	5		3.52					
SUM								
X̄ – SUM / NO. OF READINGS								
R – HIGHEST – LOWEST								

SUM / No. of READING. (X̄)

HIGHEST – L (RANGE)

PROD QUAL 20616

* For sample sizes of less

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Metric to U.S. — U.S. to Metric

Length

Metric to U.S.	U.S. to Metric
1 millimeter = 0.03937 inch	1 inch = 25.40 millimeters
1 centimeter = 0.3937 inch	1 inch = 2.540 centimeters
1 meter = 39.37 inches	1 foot = 30.480 centimeters
1 meter = 3.2808 feet	1 foot = 0.3048 meter
1 meter = 1.0936 yards	1 yard = 91.440 centimeters
1 kilometer = 0.62137 mile	1 yard = 0.9144 meter
	1 mile = 1.609 kilometers

Area

Metric to U.S.	U.S. to Metric
1 sq. millimeter = 0.00155 sq. inch	1 sq. inch = 645.16 sq. millimeters
1 sq. centimeter = 0.1550 sq. inch	1 sq. inch = 6.4516 sq. centimeters
1 sq. meter = 10.7640 sq. feet	1 sq. foot = 929.03 sq. centimeters
1 sq. meter = 1.196 sq. yards	1 sq. foot = 0.0929 sq. meter
1 sq. hectometer = 2.471 acres	1 sq. yard = 0.836 sq. meter
1 hectare = 2.471 acres	1 acre = 0.4047 sq. hectometer
1 sq. kilometer = 0.386 sq. mile	1 acre = 0.4047 hectare
	1 sq. mile = 2.59 sq. kilometers

Mass (Weight)

Metric to U.S.	U.S. to Metric
1 gram = 0.03527 ounce	1 ounce (dry) = 28.35 grams
1 kilogram = 2.2046 pounds	1 pound = 0.4536 kilogram
1 metric ton = 2 204.6 pounds	1 short ton (2000 lb.) = 907.2 kilograms
1 metric ton = 1.102 tons (short)	1 short ton (2000 lb.) = 0.9072 metric ton

Volume (Capacity)

Metric to U.S.	U.S. to Metric
1 centiliter = 10 cm³ = 0.338 fluid ounce	1 fluid ounce = 2.957 centiliters = 29 57 cm³
1 deciliter = 100 cm³ = 0.0528 pint (liq.)	1 pint (liq.) = 4.732 deciliters = 473 2 cm³
1 liter = 1 dm³ = 1.0567 quarts (liq.)	1 quart (liq.) = 0.9463 liter = 0 9463 dm³
1 liter = 1 dm³ = 0.26417 gallon (liq.)	1 gallon (liq.) = 3.7853 liters = 3 7853 dm³

Source: Machine Tool Technology. McKnight Publ. Co.

Using the above conversion chart, answer the questions.

33. How many inches are there in one centimeter? ________________

34. How many centimeters are there in one inch? ________________

35. How many feet are in one meter? ________________

36. How many feet in two meters? ________________

37. How many grams are in an ounce? ________________

Northern Illinois University
Office of Applied Innovations
and
Tooling and Manufacturing Association Member Companies

U.S. Department of Education
National Workplace Literacy Demonstration

Project Employee Assistance and Skill Enhancement (EASE) II

External Evaluation
FINAL REPORT

Prepared by

Jorie W. Philippi

September, 1995

Performance Plus Learning Consultants, Inc.
6 California Avenue
Charleston, WV 25311-2201

Introduction

Background:

The Office of Applied Innovations (OAI) of Northern Illinois University was funded by an 18-month grant award from the U.S. Department of Education and local resources to provide workplace literacy services for selected member companies in the Tooling and Manufacturing Association (TMA). The program, "Project Employee Assistance and Skills Enhancement" or "Project EASE" operated from November 1, 1993 through July 31, 1995, with a three-month no-cost extension, to determine the effectiveness of OAI's proposed workplace applications of basic skills training model.

The need for this project grew from a recognition by local educators and member companies of the Tool and Manufacturing Association that the pressures of competition in a global marketplace have accelerated the pace of change in workplace environments. Manufacturing in Illinois directly provides over twenty percent of the jobs in the state. Almost two thirds of the manufacturing jobs are located in a six-county section of the state, comprising the greater Chicago Metropolitan area. During preliminary sampling studies conducted with TMA member companies in 1992, OAI determined that out of 400 employees working in 5 different companies, 237, or 56% displayed limited proficiency in English, with 82% of this group scoring below a standard proficiency level of VIII on the BEST standardized English assessment instrument. Of native English speakers among the 400 employees to whom the Test of Adult Basic Education (TABE) was administered, 24% scored below the 8th grade reading level. The average education level was reported to be grade 10.6 and average length of tenure with companies over 8 years.

The TMA conducted a survey to determine training needs of non-toolroom positions (*i.e.*, moderately skilled and skilled jobs) of member companies in 1991. Results indicated that 36% of job classifications were computer-numeric controlled (CNC0 operations. The TMA also conducted a workplace literacy needs assessment survey in 1991. Results of this second survey identified communication problems due to lack of English proficiency and reading and math skill deficiencies.

In order to provide a well-trained local workforce that will keep the greater Chicago area economically healthy, they perceived a need for special training that would enhance the performance of incumbent employees. Because technical training-specific courses and traditional education often do not give workers a broad-based knowledge of team communication, problem-solving, critical thinking and learning-how-to-learn concepts and competencies, OAI determined the need for instructional programs that would provide the employees of partnering local companies with workplace basic skills applications that are transferable and adaptable to their changing work environment.

Prior to the funding period, OAI had begun discussions with member companies in TMA to foster the sharing of information and to clearly define local worker needs and agency responses. This careful exploration of possibilities resulted in their partnering to apply for federal grant monies for the provision of on-site basic skills programs to accompany existing company-sponsored technical training. Representatives from TMA member companies' upper level management, training, and human resource development departments met with OAI developers to ensure that the customized programs directly related to the competencies needed for company training and responded to the needs of the targeted worker participants. To this end, the education/business partnership members were committed to gathering data for performing a "front-end analysis" in order to assess basic skills needs of targeted participants. They also determined program goals, scope of content areas, length, schedules, recruitment and implementation plans. This cooperative relationship continued throughout the funding cycle.

Following numerous interviews and discussions, OAI agreed to partner with those TMA member precision metal manufacturing companies who were able to commit to total fulfillment of partnership responsibilities in the project. Companies who signed partnering agreements of commitment included:

Admiral Tool and Manufacturing Company
CAMCRAFT, Inc.
Century Metal Spinning Company
Chicago White Metal Casting
Diemasters Manufacturing, Inc.

Dudek Bock Spring
Hudson Screw Machine Products Company
Oxford Speaker Company
Panduit Corporation
Parkview Metal Products
Perfection Spring and Stamping
Triton Industries, Inc.
Tru-Die, Inc.
Wauconda Tool
Wireformers

Each partnering company agreed to contribute partial or total wages for class time for participating employees at a range of average salary rates of $6-$14, plus paid management time, ranging from $3000 to $25000, along with coverage of miscellaneous project-related expenses, for an average in-kind contribution of $32,720 per company and a total in-kind contribution of $523,524. The partnering companies from TMA each estimated they had from 10 to 80 employees who would benefit from an on-site workplace literacy training program. Benefits resulting from participation by partnering companies were envisioned to be improved quality of products, facilitation of compliance with ISO 9000 and customer requirements, ability to effectively restructure the work environment, and successfully upgrade technological levels of manufacturing equipment employees use.

The developers of the program, employees of OAI that comprise a professional staff of curriculum and training consultants and instructors with numerous advanced degrees and many years of experience in writing and training, then custom-designed, created, and delivered the instructional program. Complete participant assessment procedures and a strong, functionally contextual cognitive strategies and basic skills training program was subsequently implemented and refined during the grant period. Northern Illinois University, as the grant fiscal manager, contracted with Performance Plus Learning Consultants, Inc. to serve as a third-party evaluator throughout the project.

Purpose of the Evaluation: Northern Illinois University through the Office of Applied Innovations has requested this third-party evaluation of their U.S. Department of

Education National Workplace Literacy Demonstration Project to assess: 1.), the extent to which the project's goals and objectives have been accomplished; and, 2.), the extent to which program development, implementation, expansion, and institutionalization proceeded as planned. The published main goal of the project was to "improve workforce literacy skills leading to the improvement of workforce productivity targeted to the disadvantaged workforce, while concomitantly empowering the workers to meet the challenge of America 2000." Specifically, the evaluation objectives to be investigated were:

- on-going identification of the program's strengths and areas still needing any improvement, throughout the life of the project;

- evidence that literacy audits were conducted at partnering companies during the first 5 months of project operations, including collection of data from interviews and written work materials, observation of employees, interviews with supervisors, etc., to determine those basic skills needed to perform jobs effectively;

- evidence that task-related modules of instruction in workplace literacy skills were developed and field tested, focusing on shop math, blueprint reading, measurement, calibration, and teamwork communication for SPC and TQM practices, targeted for native speaker functioning at or below 8th grade level reading and math on the TABE and limited English proficient workers functioning at standard proficiency levels of V to VIII on the BEST;

- evidence that outreach and recruitment of at least 300 limited English proficient workers and 250 native speaking workers occurred between months 2 and 9 of project operations through:

    - packaging the programs as part of the partnering companies' training agenda;

  - involving representative employees and supervisors from partnering companies in program planning;
  - incorporating employee incentives as program goals and selling points;
  - conducting informal meetings with prospective employee participants and supervisors from each partner company to explain program goals and features;

- evidence that assessment of literacy skills of 500 prospective employee participants at partnering companies between months 2 and 9 of project operations, through:
  - administration of the TABE and the BEST;
  - development and administration of job specific assessment instruments for each partnering company;
- evidence that a minimum of 6 supervisor training and orientation workshops were conducted between months 3 and 12 of project operations;
- evidence that workplace literacy instruction was conducted as training pilots at partnering companies for a minimum of 300 limited English proficient workers and 250 native speaking workers between month 4 and month 16 of program operations;
- evidence that supportive services, such as career and academic counseling, referral to social services, and one-on-one tutoring sessions, were provided to participants, as needed, on an on-going basis; and,
- evidence that project findings were disseminated by month 18 of project operations, through:

- printed materials;

- presentations at major workplace literacy, adult education, and ESL conferences statewide and nationally;

- TMA hosted workshop(s) for association members.

Description of Project to be Evaluated: The Project Ease II Workplace Literacy Project consisted of a workplace literacy training partnership formed between the Office of Applied Innovations at Northern Illinois University and member companies of the Tool Manufacturing Association. According to the published description of the program, the design of the project was structured to meet workers' job-specific basic skills application needs in the precision metal manufacturing industry in the greater metropolitan Chicago area, through the development of functionally contextual curricula. On-site investigation and job analysis conducted by project staff resulted in the development of customized curricula and instructional delivery formats tailored to meet the various employer/worker needs of partnering companies. A brief description of the program follows:

> On-site job-linked math and reading instruction, along with workplace English as a second language training, was offered as small group, whole group, and one-on-one tutoring, using customized functionally contextual training modules. All curriculum materials that were designed for the project were relevant to adults and directly related to the specific job tasks and the environment of the precision metal workers who participated. Course materials were competency-based, and participant-centered, fully integrating reading, writing, computation, oral communication, and critical thinking/problem solving skills, as they applied to partnering company jobs. They built upon the participating employees' existing knowledge of job content and included workplace simulations and group exercises that promoted cooperative teamwork and self-directed workplace tasks. All materials were developed based upon information obtained through workplace literacy audits and then revised as needed after extensive field testing.

Instructional group sessions, conducted at the job site, had 5-18 participants. Courses were scheduled in 9-12 week cycle and met 2 or 3 times per week for 3 to 4 hours per session. Tutoring for individual employees was provided for groups of 1-3 participants and conducted at centrally located job sites for 2-3 partnering companies or at TMA facilities. In the classes targeted for workers identified as those with limited English proficiency, language mentoring by co-workers was also utilized as a reinforcement for learning. During the funding period, pre- and post-assessment scores were obtained for 307* participating workers with the TABE and BEST. Gains on the TABE averaged 1.1 grade levels, or 12%, in reading and 3.5 grade levels, or 53%, in math after only 36-48 hours of instruction. Gains on the BEST averaged 8.6 points, or 27%. A total of 12,894 contact hours were provided over 21 months.

(* *Although project records and instructor anecdotal reports indicate that there were 494 additional participants, only those for whom pre- and post- test scores were collected and submitted to the evaluator are included in the n of 310.*)

Staff-developed module print materials were desk-top published and laser printed with careful attention to uniformity of format, layout design, graphics, and high quality reproduction. A typical curriculum contained the following components:

- an overview of course, formatted by weeks of instruction, listing, purpose, applied workplace objective(s) and content performance objective(s) in basic skills area(s) addressed for each session.

- self-contained individual units of instruction, each including identification of:
  - instructional target group level(s)
  - workplace competency objective(s)
  - vocabulary
  - grammar
  - thinking skill(s)
  - team skill(s)

- listing of graphic organizers
- instructor script, broken into brief descriptions of:
  - "Presentation" - setting workplace scenario and assessing participants' prior knowledge of it,
  - "Practice" - teacher-directed activity focusing on a cluster of skills,
  - "Application" - team activity in which participants select from options that are company-wide or department-wide issues,
  - "Reinforcement" - self-directed team activity related directly to jobs of participants,
  - "Evaluation" - teacher observation, participant self-reflection, and peer observation strategies and activities, and
  - "Attachments" - a listing of handouts and graphic aids.

Units of instruction averaged 5 pages each and courses averaged 12 sessions. Revisions were made to each course, based on trainer, instructor, and participant feedback received. Course titles and topics included:

- Math You Can Use:
  - Decimals
  - Fractions
  - Conversions
  - Scrap Rates
  - Forms
  - Situational Analysis
  - Quality Assurance
  - Statistical Process Control
  - Blueprint Reading

- Workplace Vocational English as a Second Language (VESL) I
  - English and Your Job
  - At Work with My Co-Workers

  - Learner Needs in the [Company] Environment
  - Listening and Understanding
  - Communication and Quality at Work
  - Strategies for Speaking and Talking about [Product] Defects
  - Talking about Problems on the Job

- Workplace English Language Curriculum
  - Understanding Motivation for the Course
  - Identification and Action Words with Tools
  - Working Together with People from Different Cultures
  - Calling in Sick
  - Reporting Lateness or Early Departure from Work
  - Requesting Help Related to Our Job
  - Understanding the Mechanics of Gainsharing
  - Working within a Time Frame- A Schedule Related to Production
  - Understanding Instructions
  - Oral Communication Regarding Quality Standards/Defects

- Workplace Math
  - Goal Setting and Math Phobia
  - Enumerating, Computing, and Reading Micrometers
  - Basic Operations and Workplace Computing (Addition & Subtraction)
  - Basic Operations and Workplace Computing (Multiplication & Division)
  - Word Problems for Production
  - Measurement (Imperial vs. Metric)
  - Basic Operations for Fractions
  - Word Problems Using Fractions
  - Percentages and Fractional Equivalents
  - Numerical Interpretation of Blueprints and Tour of Specialty Department
  - Calculators and Estimating

- Workplace Math, Communication, and Reading Basics (VESL II)
  - Interpreting Blueprints

- Calculator Use

- Workplace Goal Setting

- Using Micrometers (Comparisons of Inches and Millimeters)

- Addition and Subtraction for Work Orders

- Determining Hourly Wages and Salary (Multiplication and Division of Whole Numbers

- Understanding Mathematical Operations and Data Usage in Calculating Raw Material Quantities, Production Quotas, and Costs

- Documenting Measurements of Materials for Ordering

- Filling Out Job Tickets (Fractional Units of Production)

- Calculating Productivity (Division of Fractions)

- Completing a PPC Chart (Using Percentages)

- Communicating Effectively with Co-Workers and Supervisors

- Reading and Filling Out Forms for HRD

- Reading and Understanding Workplace Documents

- Reading Memos, Forms, and Notices (Paraphrasing, Summarizing)

- Reading and Writing Short Notices or Memos

- Obtaining Information from Detailed Reports or Documents

- Evaluating Existing Safety Information (Listening, Speaking, Reading, Critical Thinking)

- Reading and Interpreting General Workplace Safety Memos

- Understanding the Process Sheet

- Comprehending Documents and Various Difficulty Levels

- Workplace VESL II

  -Why Are We Here? Setting Goals for Communication, Your Job, Your Life

  - Understanding the Big Picture of Production in [this Company]: What is Your Job, and Why Is It Important? What is the Job Ticket and Why Is It Important?

  - Talking about Your Job and Everything that Goes into It (Equipment, Tools, and Materials in Your Department)

  - Reading and Writing Job Tickets

- Participating in Company Meetings (Asking Questions, Listening, Understanding, and Making Suggestions)
- Communication and Quality: Talking, Reading, and Writing about Defects
- Problems on the Job, Problem Solving on the Job
- Cooperative Learning and Team Skills: Being a Better Part of the Team, Helping Others Be Better, Too
- Communication and Safety at Work: Reading Safety Rules and Writing Accident Reports

- Workplace English Language
    - Getting to Know One Another
    - Setting Goals via the IEP
    - Work-Related Vocabulary
    - Following Instructions
    - Understanding Company Memos/Forms
    - The Production Process
    - The Process of Job Advancement

- Functional Language (VESL I)
    - Introductions and Opening Conversations
    - Saying Thank You
    - Asking People to Repeat
    - Asking Favors
    - Giving Compliments and Suggestions

- Basic VESL for Manufacturing
    - Communication and Your Job
    - Talking about Equipment, Tools and Materials
    - Talking about What You Do
    - Listening and Understanding
    - Communication and Quality
    - Talking about Defects

  - Talking about Problems on the Job
  - Filling Out Forms
  - How to Keep on Learning

- Technical Reading
  - Vocabulary Building
  - Sequencing Tasks
  - Business Letter Writing
  - Distinguishing Detailed from General
  - Distinguishing Fact from Opinion

- Technical Math: Production Process
  - Why Is [Company] Offering This Class?
  - Data Massaging
  - "X-Bar, No R"
  - Winning at Work: Making the Most of Job Forms
  - The Production Process: Materiel Requisition
  - The Production Process: Materiel Suppliers
  - The Production Process: Machine Run-Time
  - The Production Process: Rejection Ratio
  - The Production Process: Packaging the Product
    - Using What We've Learned to Keep Learning

- ISO 9000 Audit (VESL II)
  - Defining Quality at [Company]
  - Discriminating/Correctly Using Wh- Question (Heat treat information and Quality Procedures Manuals)
  - Typical ISO Audit Questions and Answers

- TQL: Teamwork, Quality, Language (VESL II)
  - Setting Goals
  - Identifying Customers, Suppliers, and Workflow
  - Collecting Data and Representing It in a Pareto Chart

  - Communicating with Supervisors
  - Developing a Job Description
  - Exploring Cross-Training and Promotions
  - Solving Problems Using a Cause and Effect Diagram
  - Preparing a Presentation with Visual Aids

- Mathematics in Preparation for SPC Training
  - Math Goals: Importance of Accurate Calculations
  - Math Basics: Whole Number Operations in Job-Related Functions
  - More Math Basics: Use of Fractions and their Relationship to Decimals
  - Decimal Operations: Decimals and SPC
  - Place Value in Tolerances and Specifications
  - Calculating the Average and Range (Calculator Usage)
  - SPC Vocabulary (Computational Review)
  - In-House SPC Training

- Elementary Blueprint Reading
  - Basic Skills and the Blueprint: Uses, Methods of Production, General Parts
  - Steps in Reading a Blueprint (Basic Math Operations)
  - Basic Blueprint Lines and their Functions (Calculator Usage: Fractions to Decimals)
  - Interpreting the Plus/Minus Concept of Tolerance Range (Rounding and Estimating Calculator Readouts)
  - Dimensioning on PSS Blueprints
  - Fractional, Decimal, and Angular Tolerancing and the PSS Control Plan
  - Checking Critical Specifications with Shop Measuring Tools
  - Checking Critical Specifications with the Comparator
  - Blueprint Views: Isometric and Orthographic (Drawing an Orthographic View)
  - Materiel Specifications and the PSS Control Card
  - Blueprint Abbreviations and Symbols
  - Putting It All Together

Each course was developed and written by OAI staff, some in conjunction with company trainers or supervisors. Each course was functionally contextual, *i.e.*, utilized company materials and situations to customize units of instruction to individual partnering company and employee needs. Materials from individual company workplaces were utilized as vehicles of instruction to teach applied basic skills and metacognitive strategies to participants. This was done to enhance the level of transfer of learning back to job performance. (Please see Appendix D for a Sample of Curriculum.)

Several unique features were incorporated into instructional design. The first was focused on methodology stemming from Fuerstein's research on metacognition, which demonstrates that when learners discover cognitive strategies on their own during guided instruction, they are more likely to continue to apply the strategies after instruction than are those learners who are merely shown or told about the strategies. Lessons developed by OAI staff embodied this principle of instruction and provided participating workers with multiple opportunities for discovering mental strategies to employ when using basic skills on the job. Gain scores on posttests, participant, and manager and supervisor post-course comments indicate that instruction was, in fact, able to be applied to work performance after metacognitive discover techniques were used during instructional sessions.

The second unique feature of this project's instructional development process was the teaming of staff curriculum developers with partnering company supervisors to engage in reciprocal learning. OAI staff curriculum writers not only gathered information about the technical content of targeted participant jobs from supervisors, but also shared adult education principles with the supervisors. This allowed the OAI staff to partner with the supervisors in writing project curriculum. It broadened the knowledge of supervisors and improved overall training strategies for use with employees, as well as aiding the process of project curriculum development. This strategy also strengthened the content of project curriculum and enhanced project "buy-in" from mid-level and line management.

Method

Design:

The evaluation of OAI's *Project EASE II* Workplace Literacy Demonstration Project employed a modified version of the Context-Input-Process-Product (CIPP) model, (Stufflebeam and Guba, 1971). This method of evaluation was chosen by the evaluator as the most suitable tool for investigating the evaluation objectives, (see pages 6-8), because it examines project effectiveness through structured analysis of the cohesiveness of project goals, components, and operations, independent from comparisons to outside standards or other programs.

The CIPP model was used to analyze:

- Context (*i.e.*, shared goals and philosophy of key personnel and participants);
- Input (*i.e.*, resources, including personnel, materials, time and facilities);
- Process (*i.e.*, congruence of observed instructional development and delivery with project goals and research on instructional effectiveness); and,
- Product (*i.e.*, indicators of project effectiveness).

It is important to note that, due to geographical considerations, much of the on-site investigation was conducted by project staff and reported to the evaluator during the three site visits or via telephone communications from the project manager and director. Forms and procedures for use in data collection across sites were developed by both PPLC and project staff.

Participants:

The participants in the project were workers employed by TMA-affiliated companies. A brief description of the available composite average participant profile is provided below for reference.

Composite Average Participant Profile:

White male, 37.4 years old, having completed 9th grade, employed in the precision metal industry for 5.8 years.

More detailed demographic information about participants in the program is displayed in Figure 1 below and in Appendix C, " Project EASE II Data Analysis.

Figure 1: Demographic Characteristics of Participants (n=310*)

Average age: 37.4 years	**Ethnicity:**		**Gender:**	
	Asian	4.23%	Male	64.5%
	Black	9.12%	Female	35.5%
	Hispanic	32.25%		
	White	54.40%		
Average Number of Years Employed by Company: 9.9			**Average Education Level (in years):** 5.8	

* *Although project records indicate that there were 494 additional participants, only those for whom pre- and post- test data were collected and submitted are included in the n of 310.*

Instruments:

Data for this evaluation were requested and gathered via pre-and post-program participant surveys; structured interviews with participants, Project EASE II instructors and program personnel; and formally-documented observations of instructional sessions and reports of instructor training. Additionally, data were gathered from detailed analysis by the evaluator of program documentation, instructional materials, and participants' work (*i.e.*, pre-and post-test scores and participants' records).

Procedure:

Following initial telephone and in-person conversations with the Project Director to establish evaluation objectives, the evaluator conducted the activities listed below. Three site visits were made during the funding period, in February and October, 1994 and in March, 1995.

1. Development of Evaluation Data Collection Instruments:
    - Forms reviewed and modified for Instructor Interview, Participant Individual or Focus Group Interview, Classroom Observation, Supervisor Interview, and Program Administrator Interview.
2. On-site consultation with Project Director, Project Manager, Curriculum Specialist, Staff Trainer, and instructors concerning instructional curricula development and feedback on activities contained in them.
3. On-site interviews with company and project managers, supervisors, instructors, Project Director, and participants.
4. On-site observations of learning activities during various cycles of instruction.
5. Off-site analysis of materials and data collected from site(s).
6. Communications and operations:
    - contact throughout grant period with project via conversations with Project Director, Tipawan Reed, and Project Manager, Theodora Mills, to discuss project goals, progress, and evaluation activities and preliminary findings.

- Final External Evaluation Report submitted to Project Director September, 1995.

Results

Project Context:

To what extent are goals and philosophy of the project shared by key project personnel and participants?

This section of the evaluation is a comparison of the project goals and priorities as reported in project descriptions and interviews with key project personnel, including:

- project director;
- business partner managers from TMA affiliated companies;
- project curriculum developers and staff development manager;
- supervisors and trainers;
- project instructors; and,
- participants.

These viewpoints about project goals were analyzed for consensus and divergence.

The published project goals and purposes are contained in the grant proposal submitted to the U.S. Department of Education. They were developed cooperatively following communication between the Office of Applied Innovations and partnering TMA companies, prior to applying for the grant monies. Stated goals and purposes in the proposal were:

- to improve workforce literacy skills leading to the improvement of workforce productivity targeted to the disadvantaged workforce, while concomitantly empowering the workers to meet the challenge of America 2000 (pg. 19);
- to provide adult literacy and other basic skills services and activities (pg. 35);
- to meet the literacy needs of adults with limited English proficiency (pg. 35);

- to upgrade and update basic skills of adult workers in accordance with changes in workplace requirements, technology, and processes (pg. 35);

- to improve the competency of adult workers in speaking, listening, reasoning, and problem solving (pg. 35);

- to provide educational counseling, transportation, and child care services for adult workers during non-working hours (pg. 35)'

- to develop, validate, refine, reproduce, and disseminate basic skills curricula that 1.), are based on an analysis of literacy skills required for job competencies; and, 2.), may be transferrable to businesses or industries of a similar type or size (pg. 35);

- to activate a plan of operation that, consistent with the principles of high productivity work environments, demonstrates new methods of involving workers, whether union or non-union, in all aspects of program development, including project design, job task analysis, curriculum development, governance, recruitment, instruction, peer support, and evaluation that is integrated with team-based management or cross-training approaches used in the workplace (pg. 35).

Specific project objectives published in the proposal are listed on pages 6-8 of this report.

Project Director and Project Manager: Tipawan Reed, Project Director, and Theodora Mills, Project Manager, representing OAI were interviewed early in the project about their perceptions of program goals and philosophy. They articulated the following project goals:

- to improve the basic skills of the workforce while helping [partnering] companies become globally competitive and participate in lifelong learning; to contribute to the reshaping and re-engineering of the workforce by assisting companies in becoming learning organizations;

- to apply theories of group dynamics to teaching basic skills in the workplace and to investigate the effect of combining workplace English as a Second language training with cognitive learning theories;

- to provide train-the-trainer workshops for company trainers to demonstrate how technical skills can be linked with basic skills and English language training;

- to go beyond basic skills to integrate thinking skills, problem solving, and team building as critical skills emerging as those necessary for survival in the changing workplace; and,

- to meet the needs of the partnering employers as well as the needs of their employees.

Project Curriculum Developer and Staff Developer: Key OAI project personnel, Victoria Hathaway, Director of Curriculum Development, and Mavis Dowd, Supervisor of Staff Development, stated the following goals in an interview which took place during the first on-site visit, on February 15, 1994:

- to take employees from employer-assigned task orientation to ownership of work station processes and quality through instruction in how to identify and access resources;

- to create a replicable model for curriculum development and delivery;

- to be a supplier of quality training for the partnering companies;

- to see observable behaviors following training that indicate employees have mastered content and are applying it, such as more participation in quality circle meetings, fewer instances of needing a translator, going on for more education on their own, more applications for job postings for promotions, and so on;

- to select and train instructors who want to be on the cutting edge, who want to be a part of innovative teaching; and,

- to integrate basic skills (*e.g.*, grammar) with workplace contexts, such as reporting a problem, so that the skills are internalized and automatically used by employees as appropriate situations arise, so that it's "grammar from the inside."

Other instructors who assisted with curriculum development were also interviewed individually and as a group during one or more site visits throughout the demonstration project period. The goals they expressed centered around improving the quality of life for workers and the community. All instructors mentioned wanting to impact on participants' self-perceptions, motivation toward lifetime learning, and empowerment to achieve better working relationships with industry employers.

Business Partner Managers: Training program managers and upper level management who served as liaisons with OAI for the partnering companies were interviewed individually during each site visit. Due to geographical and time constraints, the Project Director and evaluator selected three companies of various sizes (15, 150, and 300 employees) as representative of all partnering companies to be investigated more thoroughly than the others. These were Dudek & Bock, Oxford Speaker, and Perfection Spring and Stamping. Goals expressed during interviews with HRD and training personnel, as well as senior management, at these three companies included the following:

- to increase English and math skills in assembly, shipping, receiving, and warehousing;

- to have more workers qualified for job postings after participating in the program;

- to observe more confidence in employees, *i.e.*, more employees participating in job advisory groups;
- to have more employees request tuition reimbursement for continuing education courses;
- to see evidence of the skills taught in class in use on the shop floor, which should result in fewer rejects, reduction in scrap and reworks, and reduced set-up time;
- to observe decreased frustration in non-native English speaking employees as they use more English comfortably on the job;
- to have a decrease in the need for translators on the shop floor with increases in the use of English;
- to have employees use English correctly during customer audits;
- to observe more frequent and improved use of quality charts, blueprints, layouts, and maintenance schedules; and,
- to have improved rates of mastery of in-house technical or vendor training courses.

Comments from all stressed the need for basic skills to support technical training and job performance. All mentioned the goal of having instruction be 100% work-related. When asked to identify performance indicators for superior (5), average (3), and less than average (1) workers, company supervisors and managers generated the attributes and behaviors displayed in Table 1 that follows.

TABLE 1

Using Skills		
5	3	1
Does SPC charting without help	May ask for help sometimes.	Does only what he/she is directed to do—never any extras.
Helps other employees with their job tasks.		Pretends not to understand instructions or questions.
Measures parts without being told—reads caliphers.	Measures when reminded by supervisor.	Refuses to measure parts even when reminded to do so—or does so in slipshod way.
Teaches others what he/she learns in class.	Makes some effort to speak English or do more measuring.	Seldom practices what is learned in class on floor.
Always runs machines ahead of rate.	Is able to make quick set-ups within quoted time.	Works slowly—wastes time doing non-essentials.
Makes and checks parts to prints before inspecting.	Has to be reminded to check/inspect.	Makes parts without checking/inspecting.
Masters contents of cross-training quickly and completely.		Shows impatience when asked to learn new or difficult tasks; says or indicates,"don't want any more to do."

Demonstrating Interest in Learning		
5	3	1
Always looks for better ways of learning to do things.	Makes an honest attempt to do the job.	Always gives the excuse, "I don't understand."
Always asks questions to make sure he/she is doing a task correctly.	Asks co-worker what to do.	Seldom asks questions—just does the job whether it is right or wrong.
Asks if he/she is pronouncing words correctly.	Tries to speak English—translator is last resort.	Seldom attempts to speak English with co-workers, office people or supervisors.
Asks lots of questions about blueprints, especially if the measurements are metric.	Refers to control documents only.	Seldom refers to prints at all.

Showing Loyalty 5	 3	 1
Is always on time for work and uses sick days appropriately.	Calls in if sick or late.	Abuses sick days, or is a no-show for work.
Shows willingness or volunteers to work on hard jobs.	Helps out if directed to do so.	Refuses to cover for others.
Surveys floor, if instructed, without arguing.		Only does minimum required.
Stays late to clean up on his/her own time.	Cleans up when reminded.	Never cleans around machines without being told—is untidy.

Displaying Eagerness 5	 3	 1
Asks lots of questions.	Occassionally asks questions.	Says he/she is too old to do/learn something new.
Asks for permission to do different tasks.	Does only assigned job tasks.	Resists new job assignment or any changes.
Offers new ideas to improve set-ups and production.	Tries new procedures.	

Showing Aggressiveness 5	 3	 1
Runs as many machines as possible.	Does more when encouraged or directed.	Does only what he/she has to do.
Makes noticeable effort to keep work area clean and equipment clean.	Occassionally cleans up without being reminded.	Never cleans around machines without being told to.
Pushes other employees to make required rate—even helps them.	Makes required rate.	Demonstrates recognition that he/she is not meeting rate, then goes to talk with others or disappears.
Takes parts to shipping to ensure on-time delivery.	Takes parts to shipping when told to do so.	Lets parts stay in area until picked up by/for shipping.
Helps others put materiel on machines—or does set-ups so they finish faster.	Helps when directed to do so.	Does own job only—no more.

Understanding Need for Math/Language on Job

5	3	1
Communicates with ease in English.	Tries to speak English.	Makes no attempt to speak English.
Reads and fills out traveling tickets accurately.	Has others fill out tickets.	Makes no attempt to fill out or read tickets.
Does SPC charting correctly.	Attempts to record SPC measurements.	Asks someone else to record measurements.
Is able to read materiel tags.	Asks for help in reading tags..	Ignores tags.
Is able to read and use blueprints.	Asks questions about blueprints, demonstrating lack of understanding of contents.	Seldom bothers with prints.
Does preventative maintenance on machines when scheduled without reminders.	Cleans machines, etc., when reminded.	Waits for something to break before doing maintenance.

Showing Dependability

5	3	1
Never misses a day of work.	Occassionally misses time.	Is always tardy/misses days.
Works any amount of overtime that is requested.	Works overtime, only when it is mandatory.	Asks to leave early.
Helps teach new employees tasks.	Offers minimal assistance to new employees when told to do so by supervisor.	Demonstrates attitude of "I can't be bothered" when need arises to share information or demonstrate job tasks.
Always finishes work on time.	Usually finishes work on time.	Stops work when supervisor leaves department.
Checks for good parts.	Usually puts good parts in boxes, but sometimes puts in rejects.	Puts wrong parts or rejects into boxes consistently.
Checks paperwork upon completion to make sure that it is correct—asks for clarification.	Completes paperwork with some inaccuracies.	Needs to have his/her paperwork checked—fills out production cards incorrectly.

	Demonstrating Self-Motivation	
5	**3**	**1**
Continues onto next job set-up as each job is completed.	Questions supervisors directions.	Does job incorrectly without questioning for clarification.
Remembers and follows instructions consistently.	Frequently goes to supervisor to ask to have directions repeated or reviewed.	Resists supervision—refuses to ask questions, ignores changes in directions for tasks.
Requires minimum supervision—finds next job to do on own.	Approaches supervisor to ask for next job to do when task completed.	Needs supervisor telling him/her what to do repeatedly.

	Wanting to Improve	
5	**3**	**1**
Asks how to read whole prints--not just highlights.		Shows frustration, gets angry when doesn't understand.
Asks for apprenticeship opportunities in T&D making.	Exhibits reluctance to accept changes.	Seldom volunteers or requests training.
Takse time to use measuring instruments accurately (re-sets).		Nevers checks to see if instrument is reset to "0" before measuring.
Asks to be shown how to operate additional machinery.	Attempts new tasks on own, but seldom asks questions to clarify.	Demonstrates complacency with job-- says "don't want change."
Asks for more math training.	Participates only in required training.	
Asks, then tries task on own.		Refuses to try new tasks.

	Displaying Good Attitude	
5	**3**	**1**
Appears cheerful, pleasant, upbeat.	Works with little comment; displays behaviors indicating lack of enthusiasm for job duties or tasks.	Displays surly, negative, argumentative behaviors.
Exhibits self-motivation.		Needs to be told what to do frequently.
Expresses the desire to improve.	Shows complacency toward position and skill levels.	Displays fear of change.

Going Out of Way to Help Others 5	3	1
Volunteers to help teach new employees.	Helps teach others when told to do so by supervisor.	Resists helping someone new.
Acts as a "language leader"for work station.	Displays patience with non-native English speaking co-workers.	Reverts to Spanish (always).

The attributes and behaviors listed each represent employee qualities valued by supervisors. Although not necessarily taught directly during program instruction, the basic skills applications that were taught are, in fact, embedded in the component performance of behaviors that demonstrate the attributes. For this reason, the performance indicators supervisors generated may be viewed as appropriate measures of the transfer of learning from program instruction to job performance.

Project Instructors: Five of the eleven part-time project instructors and tutors were interviewed during site visits. All concurred that the emphasis of instruction should be on work-related skills. Comments in response to structured interview questions asking about program goals for participants included:

- to target instruction for LEPs (limited English proficient speakers);
- to emphasize the participatory nature of instruction;
- to get non-native speakers or lower level literates who participate to a level of GED preparation or to test successfully; and,
- to help participants become lifelong learners.

OAI collected participant goal statements on their Individual Education Plan (IEP) forms, but these were not made available to the evaluator for inclusion in this report.

PPLC collected and analyzed goal statements from the Project Director; Project Manager; Curriculum Development Supervisor; Staff Development Director; partnering company managers, supervisors, and trainers; and project instructors. For a discussion of areas of convergence and divergence, please see the evaluation section, "Summary of Results," under Discussion. PPLC next investigated the input of resources to the project, which is addressed in the next section of the evaluation.

Project Input:

> *What resources were available to the project during development and implementation and to what extent were they used effectively?*

This section of the evaluation addresses major resources of the project. It includes program instructional materials, design, and appropriateness for targeted learner populations; key personnel qualifications and the match between published project duties; and facilities. It also examines the content and processes used for instructor training. The data presented in this section were analyzed for strengths and weaknesses.

Program materials: The instructional materials were designed for use at each of the partnering companies after developers conducted literacy audits of various targeted job tasks during the initial months of the funding period. Documentation of the literacy audits was made available and program developers spoke knowledgeably about the procedures they had used for interviewing and observing employees and supervisors and for analyzing materials to determine basic skills applications used in job task performance. Based on discussions with company trainers, managers, supervisors and project curriculum developers and the Project Director, the choice of math, reading, and communication skills contained in instructional content and objectives was that identified as necessary to support participants' performance of targeted job tasks and procedures. Because some of the partnering companies had participated in a previous grant, literacy audits served the function of updating information for revisions in some pre-existing courses custom developed for these companies by OAI.

Review of the curricula revealed numerous job scenarios and examples taken from workplace situations and technical materials. Instructional materials and the workplace examples they contained were reproduced at a high level of quality and were up to date.

Instructor scripted guidelines varied in length by course and developer, but were consistent in length and in format within the series of instructional units contained in each course. All instructor scripted guidelines consisted of the basic lesson components outlined in the Description of Project, found on pages 8-16. Variations in instructor communication styles and personalities did not appear to have an impact on the quality or consistency of instructional delivery during classroom observations conducted by the evaluator.

Key Personnel: Instructors and developers were seasoned teachers and trainers with expertise and years of experience in adult basic education, English as a Second Language, linguistics, mathematics and human resource development. Instructor and developer credentials and experience include two Ph.D. candidates, Masters degrees plus with studies in urban policy, curriculum development, anthropology, and adult education. All have multiple years of teaching experience with adults and three developers had previous experience with creating functional context materials for workplace instruction. Most of the instructors commented on the positive aspects of learning new techniques.

The Project Director, Tipawan T-Q Reed, has a Masters degree in Cultural and Linguistic Anthropology and a Certificate of Advanced Studies in Secondary and Adult Education with an ESL concentration. Ms. Reed's credentials include a lengthy list of educational research studies and investigative work in the area of adult learning and program administration. The Project Manager, Theodora Mills, has a Bachelor's degree in Sociology and extensive experience in private sector HRD positions, in addition to her rich background in directing continuing education and workplace education research studies.

Key project personnel all spoke knowledgeably and in detail about their areas of responsibility, and each individual appeared to be performing their proposed project tasks.

Facilities: Instruction was conducted on-site for each of the partnering companies. Of those companies visited (5), each provided well-lit, comfortable training rooms adjacent to shop areas in which instruction was scheduled and observed to take place. The facilities all appeared to be conveniently located, with adequate space accommodations for conducting individualized, small group, whole group, and counseling activities.

Instructor Training: Staff development training was provided on a monthly basis, throughout the grant period. Sessions were frequently led by staff members, but also included occasional guest speakers and ample time for group discussion and hands-on learning activities. Emphasis was placed on exploration by staff of cognitive research and its innovative applications to the workplace and to adult education. This project is the only one known to the evaluator that involved the entire project staff in studying, investigating, and designing applications of research findings to project activities. Monthly topics included the following:

- Designing the nested lesson: integrating graphic organizers, higher order thinking and team skills into the manufacturing content lesson
- Higher order thinking: developing through questions, graphic organizers, and problem posing
- Hands-on with cooperative learning
- Instrumental Enrichment (Fuerstein, mediating cognitive development)
- The Rassias language method
- Three cognitive development theorists: DeBono, Gardner, and Fuerstein
- Teaching learning strategies: social, metacognitive, cognitive, affective
- Introduction to Instrumental Enrichment: teaching organization of dots
- Creating a New Vision (2-day staff retreat)

- Recognizing and accommodating learning disabilities in the classroom
- Learning disabilities: implications for workplace training
- OAI's customized ESL Oral Test
- Technical (metalwork) vocabulary for workplace teachers: tools, workmanship, SPC, blueprint, dimensional metrology
- Utilizing cooperative learning structures in workplace lesson plans
- Accessing critical program information from OAI computer files
- The partner, the customer, and the front-line provider
- Working with ELDG groups: strategies for retention and instruction

In addition to monthiy full day staff development training sessions, staff were encouraged to participate or present at numerous conferences and seminars. These included:

- Ricardo Seminar: Rethinking the possibilities: developing your own unique workplace
- Secretary of State [IL] Business Roundtable: Staff development for ESL instructors
- Tooling and Manufacturing Association: OAI workplace literacy services
- Workforce Education Conference: Workplace literacy: a model for economic development; Assessment issues in workplace literacy
- National Alliance of Business Focus Group: Workplace education
- AOE Conference: The supervisor as literacy partner
- Dr. Warren Bennis: Leadership for the 90's
- IL Resource Development Center Workplace Literacy Conference: The bilingual vocational training (BVT) model; Marketing workplace literacy

- Tooling and Manufacturing Association: Strategic planning meeting
- Steven Covey: Principle-centered leadership
- Tooling and Manufacturing Association: Instrumental Enrichment
- IL Resource Development Center Workplace Literacy Conference: Year two and beyond in workplace literacy
- IL Resource Development Center on-site interview: How OAI integrates basic skills into vocational training

OAI also provided structured shadowing and mentoring with master teachers for instructors and new faculty to ensure a thorough understanding of project activities and philosophy. Shadowing activities included literacy audits, high frequency courses, and corporate client planning team meetings. Mentoring allowed for gradual assumption of instructional responsibilities in consort with an experienced teacher. A checklist of training competencies for educational theory, corporate relationships, and instructional applications was also utilized with each instructor.

Bi-weekly full-time staff meetings also were scheduled and conducted, in addition to the monthly all-staff meetings described above. At these meetings, full-time staff grappled with issues, such as customized assessment and research development, integration of newly learned techniques and theories into workplace programming, marketing of OAI services, and creating fee-for-service products.

A staff manual was also developed during the course of the funding period. It contains information about operational and assessment procedures, forms and directions for developing Individual Education Plans, sample lessons and topical outlines, and information on instructional methodology. The manual continued to be used and expanded upon throughout the demonstration.

For a discussion of strengths and weaknesses of available project resources and the effectiveness of their use, see "Summary of Results" under Discussion section of the evaluation. The next section of this evaluation examines the process of project delivery.

Project Process:

> *To what extent were program development and observed instruction congruent with project goals and research on instructional effectiveness?*

Instructional Organization: Employees from participating partnering companies were assessed during intake with the TABE tests for Math or Reading and/or with the BEST, depending upon company identified areas of need. In addition, customized tests developed by OAI (see Appendix E for samples), were administered, where applicable. Instructors used the results of these tests to diagnose participant needs and to develop Individual Learning Plans (IEPs) with selected competencies and skill content materials at appropriate levels of placement. Guidelines for local progress criteria or indicators included company suggested observable measures of improvement on performance of job tasks, grade level gains on TABE post-tests, and demonstrated mastery of competencies, as evaluated by participant self-assessment and by instructors. Performance on the BEST English language test was categorized by one of eleven prescribed performance levels, ranging from "no ability whatsoever" to "ability equal to that of a native speaker, of the same socio-economic level" using specific indicators for comparison of results in each category. Companies were provided with pre-training assessment results, presented as roll-ups of numbers of employees scoring at certain levels and/or demonstrating proficiency in specific competencies.

Instructional sessions held during the project were of 90 minutes duration and met one or two times per week at the worksite. Individual participant files and cumulative records were sampled and observed to be up to date and include test scores, competency check lists (from supervisors, teachers, and participant self-assessments), IEPs, participant final evaluations of courses, and samples of work documenting mastery of competencies.

The nature of instruction and types of learning activities were determined through observation as well as interviews with instructors. Approximately 40% of instructional time was spent working in whole groups with demonstration and learner participation in guided skill application exercises, 40% of time spent working in small groups, and 20% of instructional time was spent in one-on-one instruction with participants or participants working independently. This compares favorably with the ideal of less than 50% teacher-talk during any one instructional session (Goodlad). On-site interviews and observations occurred two times during the middle phase of the project.

Instructional Engaged Time: Learner engaged times during observations was quite high. Most learners appeared to want to learn, seemed to enjoy moving through the instructional units, and spent 85%-95% of time in the classroom actually participating. The program participant engaged time and interaction with instructor compares well with engaged times of 40% -50% reported for observations of high school classrooms (Mikulecky). Adult learners came ready to work and managed twice as much effort per hour as adolescents manage in school rooms.

Instructional Quality: The quality of instruction provided by the materials has been discussed earlier in the Context and Input sections of this evaluation. It was, for the most part, quite high. Observed instructors had established good rapport with participants and took an active role in monitoring learner progress, encouraging learners, and providing explanations when necessary. Solid judgments of the quality of instructor explanations of concepts were observed in each site visit. Consistency in instructor ability to explain the thought processes for the job-related basic skill and cognitive application procedures being taught was evident. For example, all instructors were able to explain several approaches to mathematics or communication that elucidated the thought processes involved. This coincides with the developers' intent for use of the customized curricula and with current state-of-the-art transfer of learning practices for workplace literacy in both the military and private sectors that result in highly effective application of instruction with training that refocuses instructional delivery practices from the teaching of memorized procedures to the teaching of comprehension via modeling and/or eliciting the thought processes (metacognition) used in applying skills to performance contexts.

Interaction with Partnering Companies: Throughout the project, OAI was in constant communication with each partnering company and with the TMA. Initially, OAI met with the company planning committee to identify supportive services needs and to formulate plans for their provision. Literacy audits and assessment of employees was conducted. Following each literacy audit and employee assessment, pre-training reports were issued to the company liaison(s). OAI assisted the company with publication of the availability of program services and with recruitment initiatives. Past project particpatns, where applicable, were also recruited as peer tutors. Instruction was provided to employees, along with career counseling. After completion of training, post-training results were issued to the company liaison(s).

Additionally, OAI developed a structured five-stage change model to facilitate movement of partnering companies along a workplace literacy developmental continuum, based on their levels of organizational readiness to adopt innovations. Table 2 on the next page displays the five stages of partnership. The continuum enhanced OAI's ability to work with a variety of business partners, some who had been partners in previous grants and those who where new to this grant. It also provided a road-map for companies to assist them in identifying their current levels of commitment and in determining future activities and levels of involvment with workplace literacy training.

Interaction with Tooling and Manufacturing Association (TMA): OAI and TMA met on a regular basis and conducted joint presentations for partnering companies and for other TMA member companies to provide updated information on project activities and

Table 2: Stages of Development of EASE Partnering Companies

Stage	Service Focus	Timeframe
Stage I - Aware and Interest: New to the partnership Limited or no experience/knowledge in providing workplace literacy training Aware of need but cannot articulate it Pressures to implement the program are external (i.e., ISO 9000, TQM, vendor requirements) Past in-house training experience hsa been sporadic and unsuccessful Support for program limited to one or two individuals in the company	• Program planning • Initial literacy and portable skill audits • Employee assessment • Limited pilot instruction • Partnership building • Company needs assessment	1-2 years
Stage II - Informed: Have been with partnership for 2 years or have provided training using other resources Have had limited but successful piloting experience Willing to expand program to other groups of employees Because of initial success, program begins to generate more internal support See connection of basic skills to other training	• Audit updates • Assessment of employees not previously assessed • Replication and expansion of pilot instruction • Partnership building	1-2 years
Stage III - Involved: Have been with partnership or have had successful program experience for 2+ years Program receives full support from top level management Have introduced other innovations into the workplace (i.e., gainsharing, new machinery, SPC, technical training, etc.) Have expanded program to train native English speakers and LEPs Have integrated basic skills with other technical and management training Have developed a formal planning committee represented by all stakeholders.	• Audit updates • Employee assessment updates • Refinement and further replication of curriculum and instruction, plant-wide • Assessment of needs for capacity building and development of action plans • Partnership building	1-2 years
Stage IV - Committed: Have been with partnership and will continue Have observed program success in terms of productivity Program received support at all management levels, including line supervisors Have been involved with every aspect of partnership, including disseminating own success. Have developed and implemented long-range, cohesive training plan Have seen benefit of training as HR investment Mangement has shifted to employee-centered practices Committed and ready for capacity building	• Identification of needs for capacity building • Development of action plan • Implementation of plan • Demonstration of curriculum and best practices via Graduated Delegation/Capacity Building model	2-3 years
Stage V - Renewal: Have been with partnership from beginning Have received fully extensive capacity building services into on-going training Have received success in adaptation of innovation Equipped to access other resources Committed to using own funds Achieved in-house expertise for self renewal	• No additional services needed	(n/a)

outcomes. Meetings were announced via flyers and project presentations were delivered by OAI staff. After initial partnership activities in assisting with recruitment and selection of partnering member companies, TMA allowed OAI to assume major responsibilities for project operations.

For a discussion of project process, please see "Summary of Results" under Discussion section of the evaluation. Following receipt of final data in June, 1995, PPLC assessed program outcomes (or "product") to determine the degree of project effectiveness.

Project Product:

To what extent are there indicators of project effectiveness?

The C.I.P.P. model enables gathering of evaluation data from more than one source to promote triangulation of results in an attempt to arrive at valid conclusions concerning project effectiveness. PPLC evaluated OAI's Project EASE II from three different perspectives of the stakeholders:

- participant pretest/posttest scores and survey statements concerning achievement of personal learning goals and value of the course(s);
- reports from instructors, recording participant mastery of course contents and applications of skills learned to work-related and everyday tasks; and,
- post-training interviews with TMA member partnering companies to discuss perceived program effectiveness and future commitment to its use in their organizations.

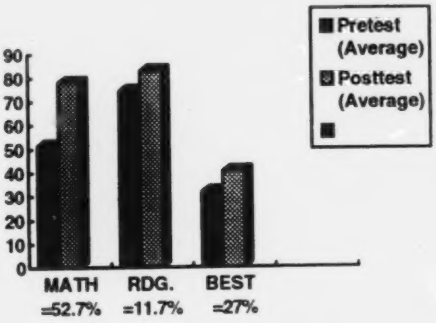
Meeting Participants' Goals: The first aspect of project product effectiveness was collected on post-program surveys concerning the degree to which participants in the various courses were able to achieve their personal learning goals. On the course evaluation sheet samples forwarded to the evaluator, participants expressed satisfaction with the content of courses. Frequently mentioned were specific course objectives, *i.e.*, improved blueprint reading, improved communication skills in English, improved math, the ability to explain workplace problems, and the achievement of better understanding with supervisors. Workplace applications mentioned as results of the training included the ability to perform dimensioning tasks with greater accuracy and the ability to operate more machinery. Participants interviewed during site visits indicated that the courses were building their confidence and enabling them to use the skills they were learning in order to improve current job task performance. In asking learners to rate the program the evaluator heard that the contents, instructors, and schedules all received ratings of "extremely helpful" or "very helpful." Participants' reasons included liking the individual attention because they received encouragement and their questions were answered; instructors who seemed to really understand participants' needs and were able to explain things well; convenience of meeting times and locations; and the relevance of materials to their personal and workplace needs. There were no suggestions for improvement, except the request for more training courses like the ones provided under this grant.

Paired sets of TABE and BEST pretest-posttest assessment scores evidenced gains in all categories. The chart below displays compared pre-assessment and post-assessment scores by average percentage of correct answers. The average score on the TABE Math pre-assessment was estimated grade level (EGL) 6.65, or 51.5% correct; on the TABE Reading pre-assessment, EGL 9.6, or 74.4% correct; on the BEST pre-assessment, Speaker Proficiency Level (SPL) 31.95 (n = 310). The median score on the TABE Math pre-assessment was EGL 6.5 and the most frequent score, or mode, was EGL 6.0. The median score on the TABE Reading pre-assessment was EGL 9.6 and the mode was EGL 10.9. The median score on the BEST pre-assessment was SPL 27 and the mode was SPL 14. The TABE Math post-assessment average score was EGL 10.1 or 78.2% correct, the median was EGL 10.6, and the mode was 12.9. The TABE Reading post-assessment average score was EGL 10.7 or 82.9% correct, the median was EGL 5.6, and the mode was 12.9. The BEST post-assessment average score was SPL 40.58, the median was SPL 39, and the mode was SPL 51. The average gain on the TABE Math was 3.5 estimated grade levels, or 52.7%. The average gain on the TABE Reading was 1.2 estimated reading grade levels, or 11.7%. Total average gain on the TABE Math and Reading tests was 2.85 estimated grade levels. The average gain on the BEST was 8.6 points, or 27%.

Total average gain on all instruments was 53.23%. A complete display of scores by individual participant, assessment instrument, and test can be seen in Appendix C.

Average Percentage Gains from Pretests to Posttests

(n = 310)



Overall average gain= 53.2%

Based on post-training participant statements, the pre-post gains provide strong evidence that instruction was effective in helping participants work toward or achieve their personal learning goals.

Instructor Records: To determine how and if learners were mastering competencies taught and transferring new concepts and skills learned to applications on the job, PPLC examined instructor post-course records and anecdotal reports. The copies of competency check lists received by the evaluator indicated that, based on instructor observation, an average of 78% of participants mastered competencies taught to levels of 50%-80% or to 80% or better. Competencies included the following:

Speaking:

Describes own job
Describes promotion opportunities

Explains purpose of F&G forms

Demonstrates platform skills

Reading:

Accesses critical information from blueprints and forms

Writing:

Records ideas from problem-solving meetings

Critical Thinking and Problem Solving:

Identifies/defines problem

Discovers causes

Develops and evaluates alternative solutions

Selects best option and resources to implement

Evaluates outcomes

Math:

Adds, subtracts, multiplies, and divides decimals

Calculates averages for SPC

Understands SPC tolerance range

Identifies blueprint angles

Converts from inches to millimeters

Team Skills:

Works cooperatively with others in team or pair practice exercises

Participates equitably in training activities

Respects contributions of others

Performs assigned roles in group activities (timekeeper, checker, encourager, reporter)

Learning to Learn Strategies:

Sets learning goals

Monitors progress

Recognizes learning gaps

Identifies resources

Recognizes achievement

Instructor anecdotal records were kept for each instructional session and contained descriptions of overall impressions of class progress and descriptions of most effective and least effective instructional activities. As a whole, these reports offered little insight into specific examples of participant transfer of learning to performance of job tasks. The instructor judgment of the effectiveness of particular learning activities, however, may serve as good feedback for curriculum revision or refinement.

Post-Training Interviews with TMA Member Partnering Business Representatives: During site visits, the evaluator interviewed managers and project liaisons from three of the partnering companies, Dudek & Bock, Perfection Spring and Stamping, and Oxford Speaker. All reported that the program appeared to be effective. They cited observed employee improvements in English language use in talking with supervisors to solve job problems and in the accuracy of math calculations used on the job, which they attributed to the instruction offered to those employees who would have otherwise experienced difficulty and possibly failure, in mastering job performance requirements. Specific comments included the following:

- The program has enabled an increased number of our workers to move from union floor positions to lab (non-union) positions and allowed us to promote others to supervisory positions because of their improved communication skills. One shop floor employee was able to be cross-trained to man the switchboard during the evening shift to take west coast calls.

- More of our workers are qualifying for job postings than ever did before the program. They're more confident, *e.g.*, participate in more advisory job groups, and they now demonstrate a desire for self-improvement. There's a real change in their attitudes.
- We see improvements in our paperwork-- much more accuracy now.
- The English skills of our non-native speakers have improved greatly. For example, our Hispanic employees previously hesitated to speak in public, especially the females. Now they're much more assertive, asking questions in meetings, etc. Some have even asked to make speeches at training program graduation ceremonies! Most important is their ability to communicate now without translators. They gather information from each other on the job in English. One worker polled all her co-workers in the department to determine their preferences for new work smocks before ordering them-- all in English. Another wrote an article for our newsletter about a co-worker with 51 years with the company.
- Our company mission statement now includes "lifelong learning support."
- We anticipate seeing decreasing costs because our employees' improved skills are enabling them to make a better quality product and increasing their productivity rates.
-

- During customer audits, many of our employees who would literally try to hide before are now explaining our procedures to visitors. They're also better able to use our quality charts-- incidences of charting (and accurately) are way up.

- Our employees now understand our gainsharing meetings-- before this training, they used to stand silently while we presented the information. Now they ask questions and comment frequently.

- Reading of layouts and maintenance schedules has increased. They used to just ask the supervisor or a co-worker who read English to tell them what they wanted or needed to know.

Additionally, OAI received numerous letters from trainers and supervisors at the partnering companies, extolling the program for the positive results they observed in workmanship and quality on the shop floor and in company technical training sessions. One company received a Supplier Excellence Award from their customer and attributed their ability to do so to their employees' participation in the program.

For a discussion of program product, or outcomes, see "Summary of Results" under Discussion section of the evaluation report, which begins on the next page.

Discussion

Limitations of this Study:

There was one factor that acted as a limitation on the ability of this study to draw definitive conclusions from the evaluation. This was the difficulty experienced by the evaluator in collecting and obtaining some of the requested data from some of the program partners in the formats required for inclusion in the evaluation. The conduction of data collection from a distant location for the majority of the demonstration period placed excessive responsibilities on an already over-burdened local project staff. Although the staff in this project exhibited an exceptionally cooperative attitude, the unavoidable off-site monitoring functioned as a somewhat limiting factor in this evaluation in that there was a minimum of direction and no training available in using the various data collection instruments and techniques that were developed.

Summary of Results:

The following statements provide summary and discussion of key findings from the evaluation of the project context, input, process, and product.

Context: The extent to which the goals and philosophy of the project were shared by key project personnel and participants was found to be as follows:

> Areas of consensus - During this funding period, there was a good deal of consensus about program goals among the project director, project manager, program developers, and partnering company liaisons. All highlighted the importance of the instruction as a means for mastery of basic skills and their applications to job tasks and requirements. The use of these skills to foster workers' abilities to enhance career opportunities and organizational

competitiveness through improved job performance was mentioned by all. Participants also commented on their desire to improve these skills and on the program's relevance to accomplishing their personal goals.

Areas of divergence - There was no evidence of divergence from the stated goals of the project.

Input: The availability to the project of resources during development and implementation and to what extent they were effectively used was found to be as follows:

Strengths and Weaknesses - The curriculum materials developed for the program contained numerous job task examples of skill applications, enabling participants to readily identify situations to which their newly acquired skills could be transferred. Resources for program development appeared adequate financially for instructional delivery. Materials development time lines incorporated across the delivery time lines of the program were met. Content of the program curricula was well designed, and included the eliciting and modeling of thought processes, which enables portability of skills to new work situations as they arise. The resulting original materials created for the project contain strong lessons that offer participants opportunities to develop cognitive awareness of their thinking strategies during applications of basic skills to job tasks and that enhance the probability of continued application of those skills learned. The inclusion of pre- and post-tests or assessments for all curricula would provide strong evidence that participants made progress in mastering the content of the programs. Using a more structured format for scripting instructional delivery guidelines would ensure uniformity among instructor presentations and across course materials. This would improve the quality of instructional materials.

Instructor and program developer qualifications and previous experience were rich and highly professional; they provided a definite enhancement to the program overall. Criteria might be derived from a composite profile of the qualifications and background of project key personnel at OAI for use as hiring guidelines for project or program institutionalization or replication.

Instruction training sessions, activities, and monitoring techniques proved to be exceptional; they more than provided the support system that the program needed for full acceptance of the program, congruence of purpose, and mastery of instructional techniques. The staff development program was one of the most comprehensive and meaningful that this evaluator has seen in more than seven years of evaluating similar US Department of Education National Workplace Literacy Demonstration Projects. The emphasis on learning theory and the opportunities to pioneer applications of a variety of such theories in a corporate environment epitomizes the purpose of educational demonstration projects.

Process: The extent to which program development and observed instruction were congruent with program goals and research on instructional effectiveness follows:

Areas of convergence and divergence - Learner engaged time was quite high and participants spent 85%-95% of time in the classroom actually participating in skill building activities. Both instructors and participants appeared motivated to take full benefit of instruction time and took pride in the efforts made.

The quality of instruction was excellent overall. The instructors observed appeared to be engaged in "reciprocal learning" with the participants and displayed a caring attitude and willingness to assist learners achieve their goals. An ability to demonstrate and elicit the thinking processes, (*i.e.*, metacognition), necessary for basic skills to be taught effectively was evidenced in all observed delivery and in scripted guidelines for instructional delivery that were reviewed and analyzed.

Project management, selection, and recruitment of participants, and so on, were well administered and appeared to be effective. There are indications that program advertisement and publicity accurately reflected content, that instructional sessions were scheduled for convenient times and locations, and that participants' goals were being met satisfactorily. Meetings occurred with partnering organizations on a regular basis, providing opportunities for feedback and discussion of issues. The categorization of partnering companies by stages of involvement in, and levels of commitment to, workplace literacy endeavors enabled OAI to offer multiple levels of service and differing focuses on activities along a continuum, based on organizational needs and capacity, to each individual partnering company, even in workplace environments characterized by rapidly accelerating change. In this way, OAI also was able to track the progress of each company as it moved toward institutionalization of workplace literacy across the organization as an integral part of on-going training.

Product: The impact of the program was assessed with a combination of indicators, including comments from participants and instructors, comparisons of pre- and post-test scores, and exit interview responses from key personnel representing the business partners. A summary of the results follows.

Business and industry organizations normally evaluate training on four levels. Because workplace literacy programs are directly related to assisting workers attain career goals by meeting job requirements and improving performance on job tasks, it is appropriate to measure program outcomes using this yardstick:

Level I - does the proposed program match with an identified organizational need? In this case, the project programs were desired by the partnering companies, TMA members, to enable their employees to master skills that facilitate more effective job performance through improved workplace application basic skills. The grant application shows that specific job tasks and special needs of each company were identified and targeted. The job tasks and requirements were carefully selected and analyzed through literacy audits, from which the curricula were then developed.

Level II - do the participants selected for training master the content of the training program? Impressive gains from pre- and post-test scores, instructor records of levels of competency mastery, and post-program statements by supervisors, managers, and participants provide strong evidence that participating employees mastered the content of programs for which this data was collected.

Level III - do those participants who master training demonstrate improved job performance in areas identified as critical to show positive transfer of learning? Participant post-course responses and comments elicited during post-training interviews from partnering company spokespersons indicated that significant changes in participating employee performance were noted. Of those who cited improvements, they were able to identify specific observable, measurable behaviors that clearly demonstrated positive transfer of course content to job training tasks.

Level IV - does impact on performance lead to demonstrable cost benefits, i.e., money saved or generated, by the positive change in employee behavior? In this case, TMA member partnering companies did not report indications of positive program impact by means of individual participating employee behavioral indicators, or performance appraisals. Post-training supervisor ratings on competency check-lists were collected, but not made available to the evaluator to analyze. No data was available, therefore, for determining the possible cost benefits derived by individual companies from employee participation in the programs. Company spokespersons did report observed positive changes in employee workplace behaviors and implied that there were anticipated cost savings from improved performance and quality that would indirectly result from increases in the skills of participating employees.

When programs are underwritten by federal funding, it is viewed in a positive way to apply such monies to value-added training for an organization's workers. When an organization does not elect to invest in continued human resource development (*i.e.*, the program) at this level of commitment beyond the funding period, it indicates that such training has not become an organizational priority. In discussions held by the evaluator with representatives from three of the partnering companies at the conclusion of the project, the decisions to institutionalize and replicate the demonstration project had not been finalized. However, each company spokesperson did say that his or her company would "probably" continue the program on a fee for service basis with OAI after the grant period. This is evidence that the program is viewed as one that adds value to the organization.

Conclusions and Recommendations

Based on the results of this evaluation, the following conclusions and recommendations concerning stated grant goals are offered.

There is strong evidence showing:

- that task-related modules of instruction in workplace literacy skills were developed and field tested, focusing on shop math, blueprint reading, measurement, calibration, and teamwork communication for SPC and TQM practices, targeted for native speakers functioning at or below 8th grade level reading and math on the TABE and limited English proficient workers functioning at standard proficiency levels of V to VII on the BEST.

- that outreach and recruitment of at least 300 limited English proficient workers and 250 native speaking workers occurred between months 2 and 9 of project operations through:

  - packaging the programs as part of the partnering companies' training agenda;

  - involving representative employees and supervisors from partnering companies in program planning;

  - incorporating employee incentives as program goals and selling points; and,

  - conducting informal meetings with prospective employee participants and supervisors from each partnering company to explain program goals and features.

- that assessment of literacy skills of 500 prospective employee participants at partnering companies occurred between months 2 and 9 of project operations through:
  - administration of the TABE and BEST; and,
  - development and administration of job specific assessment instruments for partnering companies.

- that project findings were disseminated by month 18 of project operations through:
  - printed materials;
  - presentations at major workplace literacy, adult education, and ESL conferences statewide and nationally; and,
  - TMA hosted workshop(s) for association members.

There is a moderate amount of evidence indicating:

- that literacy audits were conducted at partnering companies during the first 5 months of project operations, including collection of data from interviews and written work materials, observation of employees, interviews with supervisors, etc., to determine those basic skills needed to perform jobs effectively.

- that a minimum of 6 supervisor training and orientation workshops were conducted between months 3 and 12 of project operations.
- that workplace literacy instruction was conducted as training pilots at partnering companies for a minimum of 300 limited English proficient workers and 250 native speaking workers between month 4 and month 16 of project operations.
- that supportive services, such as career and academic counseling, referral to social services, and one-on-one tutoring sessions, were provided to participants, as needed, on an on-going basis.

Recommendations:

1. Provide written documentation to show that all aspects of literacy audits were conducted and completed and how these were utilized to determine *custom-designed* workplace literacy course content for *each* participating company. This would also serve as verification and content validation for development of an industry-wide metal working curriculum of core courses that could be used by any companies similar to those served during the funding period.
2. Although supervisors at one company visited reported attending such a session, there is little other evidence that these meetings occurred. Provide additional documentation, such as meeting agendas and notes that detail

activities and capture supervisor reactions and questions about the program. This information could also be useful in developing a briefing handbook for marketing or program support with new client companies. Front-line supervisors are the most difficult level of company personnel from which to gain program commitment because of the conflict that naturally arises between short-term production goals and long-term investment in HR training. Such a publication could be an invaluable tool for addressing and responding to some of the issues that arise each time a workplace literacy program is conducted on total or shared company time.

3. Because courses were often repeated at companies with no indication of changes or revisions from one rendition to the next, it appears that instruction was not in a pilot phase. Running documentation of participant, and company reactions, as well as those of instructors conducting activities, along with the resulting changes made to the courses, can prove an invaluable aid to curriculum developers as they strive for continuous improvement of their product.

4. Although the support services were listed as an "as needed" program component, there was no documentation indicating to what degree they had been utilized by participants. Keeping detailed records of requests or instances of use can assist program directors and companies in making program decisions by accurately forecasting levels of need and cost for continuing provision of these program enhancers, should they prove necessary.

Concluding Statement:

After working with this project for almost two years, it is the opinion of the evaluator that this has been a highly effective U.S. Department of Education Workplace Literacy Demonstration Projects. This conclusion is based on abundant evidence showing: 1.), the vast amount of high quality, customized functionally contextual curriculum that the staff produced throughout the demonstration period; 2.), the dedication of OAI staff to application of research and innovative techniques that cross theoretical fields for the betterment of adults in the workplace; 3.), the ability of the project director and manager to accomplish project tasks and solve unforeseen daily problems through tenacity, innovation, an unflagging high energy level, and constant attention to detail; and, 4.), the indications of continued workplace literacy training in many of the partnering companies. These ingredients indicate success and suggest that this project is one that should receive strong consideration for use as a national model.

Appendix A

Sample Literacy Audit Materials

OAI
Chicago
Proposal Phase II
1993-1995

LITERACY AUDIT

Company: ______________________________

Address: ______________________________

Phone: ________________ FAX: ________________

Company Contact: ______________________________

Title/Department: ______________________________

Company Product or Service: ______________________________

Company Work Schedule: ______________________________

# of Hourly Production Employees @ Location: ________________

# of Salaried/Office Employees @ Location: ________________

Total # of Employees @ Location: ________________

Listing of Departments: ______________________________

Company Sector to be Audited (Circle):

PLANT OFFICE WHOLE SITE

Date of Audit: ______________________________

Staff Responsible: ______________________________

Company Mission or Philosophy (Collect): ______________________________

MULTI-PERSPECTIVE SURVEY OF LITERACY NEEDS

CORPORATION ______________________________ DATE ____________

HUMAN RESOURCES INTERVIEW (Name ___________ Title ______________)

1. What are the main company goals for the future? (e.g. participatory management, zero defects, ISO 9000 certification, TQM) What training will be made available to accomplish these goals?

2. What problems do you observe in the current workforce?

   Communication:

      LEP -

      Native English Speakers -

   Literacy:

   Numeracy:

   Other (e.g. diversity):

3. Are there any personnel issues to resolve? (e.g. turnover, absenteeism, morale)

4. What training is available to new and current employees? (tuition reimbursements for GED, technical training, other continuing education, job qualification training)

QUALITY CONTROL INTERVIEW

Name______________________________ Title________________________

1. What are the goals of the Quality Control Department, and how do you plan to implement these goals?

2. Who is involved in quality control?

3. Do you plan to implement any new Quality Control procedure? (e.g. SPC, inspection)

4. What problems do you observe in the current workforce?

   Communications:

      LEP -

      Native English Speakers -

   Literacy:

   Numeracy:

   Other (e.g. attitudinal):

Listening / Speaking	#1	#2	#3	#4
Oral instruction				
Information via meeting				
Answers phone				
Relays messages				
Requests assistance				
Requests supplies				
Briefly reports task status				
Extensively reports on work				
Reports illness and injury				
Interacts socially in:				
English				
Spanish				
Other (specify)				
Interprets Safety Signals				
Other communications:				

Reading*	#1	#2	#3	#4
Manuals				
Instruction Sheets				
Labels				
Safety Signs				
Location Signs				
Inventories				
Memos				
Blue Prints				
Schematics				
Charts				
Graphs				
Tables				
Alphabetical files				
Numerical Files				
Measuring Instruments				
Machine Control Panels				
Other (specify)				

Writing*	#1	#2	#3	#4
Work Reports				
Production Reports				
Quality Control Reports				
Graphing				
Meeting Reports				
Inventories				
Phone Messages				
Personnel Forms				
Income Tax Forms				
Insurance Forms				
Other Benefit Forms				
Other (Specify):				
Computer Access				
Word Processing				
Keyboard				
QC Data Entry				
Other (Specify):				

Mathematics	#1	#2	#3	#4
Whole Numbers				
addition				
subtraction				
multiplication				
division				
Fractions				
addition				
subtraction				
multiplication				
division				
Decimals				
addition				
subtraction				
multiplication				
division				
Calculator Functions				
Other (Specify):				

Problem Solving	#1	#2	#3	#4
Identification				
Decision				
Solution				

Problem Solving	#1	#2	#3	#4
Implementation of Plan				
Solves on Own				
Conveys to Supervisor				

* Collect Samples

PRODUCTION INTERVIEW

Name:________________________________ Title____________________________

1. What are the goals of the Production Department, and how do you plan to implement these?

2. What changes in production do you foresee? (e.g. job rotation, J-I-T, team production, layoffs)

3. What problems do you observe in the current workforce? (Specify others involved: supervisor, co-worker, office staff)

    Communications:

        LEP -

        Native English Speakers -

    Literacy:

    Numeracy:

    Other (e.g. attitudinal):

SUPERVISOR INTERVIEW:	JOB TITLE #1:	JOB TITLE #2:
1. Who does the employee speak to? (requests, reports, etc.)	1.	1.
2. What does employee read? (manuals, signs, labels, charts, control panels, etc.)	2.	2.
3. What does employee write?	3.	3.
4. What computation does employee do?	4.	4.
5. What situations does employee troubleshoot?	5.	5.
EMPLOYEE INTERVIEW:		
A. What do you do on your job?	A.	A.
B. Who do you speak to?	B.	B.
C. Who gives you instructions?	C.	C.
D. What do you read?	D.	D.
E. What do you write?	E.	E.
F. What math do you do?	F.	F.
G. What problems do you need to solve in your work?	G.	G.
Additional comments:		

DEPARTMENTAL OVERVIEW
SUPERVISOR INPUT

NAME ______________________ TITLE ______________________

1. Do employees attend team meetings, e.g. quality circles?

2. Describe situations needing improvement in:

   Communication -

   Literacy -

   Numeracy -

   Other -

3. What are the job titles/positions in this department?

4. What qualities describe a model employee?

SUPERVISOR INTERVIEW:		JOB TITLE #1:	JOB TITLE #2:
1	Who does the employee speak to? (requests, reports, etc.)	1	1.
2.	What does employee read? (manuals, signs, labels, charts, control panels, etc.)	2.	2.
3.	What does employee write?	3.	3.
4.	What computation does employee do?	4.	4.
5.	What situations does employee troubleshoot?	5.	5.
EMPLOYEE INTERVIEW:			
A.	What do you do on your job?	A.	A.
B.	Who do you speak to?	B.	B.
C.	Who gives you instructions?	C.	C.
D.	What do you read?	D.	D.
E.	What do you write?	E.	E.
F.	What math do you do?	F.	F.
G.	What problems do you need to solve in your work?	G.	G.
Additional comments:			

3

JOB TITLE #3:	JOB TITLE #4:
1	1.
2.	2.
3.	3.
4.	4.
5.	5.
EMPLOYEE INTERVIEW:	
A.	A.
B.	B.
C.	C.
D.	D.
E.	E.
F.	F.
G.	G.

Additional comments:

u

Listening / Speaking	#1	#2	#3	#4
Oral instruction				
Information via meeting				
Answers phone				
Relays messages				
Requests assistance				
Requests supplies				
Briefly reports task status				
Extensively reports on work				
Reports illness and injury				
Interacts socially in:				
English				
Spanish				
Other (specify)				
Interprets Safety Signals				
Other communications:				

Reading*	#1	#2	#3	#4
Manuals				
Instruction Sheets				
Labels				
Safety Signs				
Location Signs				
Inventories				
Memos				
Blue Prints				
Schematics				
Charts				
Graphs				
Tables				
Alphabetical files				
Numerical Files				
Measuring Instruments				
Machine Control Panels				
Other (specify)				

Writing*	#1	#2	#3	#4
Work Reports				
Production Reports				
Quality Control Reports				
Graphing				
Meeting Reports				
Inventories				
Phone Messages				
Personnel Forms				
Income Tax Forms				
Insurance Forms				
Other Benefit Forms				
Other (Specify):				
Computer Access				
Word Processing				
Keyboard				
QC Data Entry				
Other (Specify):				

Mathematics	#1	#2	#3	#4
Whole Numbers				
addition				
subtraction				
multiplication				
division				
Fractions				
addition				
subtraction				
multiplication				
division				
Decimals				
addition				
subtraction				
multiplication				
division				
Calculator Functions				
Other (Specify):				

Problem Solving	#1	#2	#3	#4
Identification				
Decision				
Solution				

Problem Solving	#1	#2	#3	#4
Implementation of Plan				
Solves on Own				
Conveys to Supervisor				

* Collect Samples

Appendix B

Sample Data Collection Forms

Personal Data for Assessment

Date: ___/___/___ Company: ______________________

Name: ______________________
Last First Middle

1. Address: ______________________
Street City State Zip Code

3. ☐ Asian/Pacific Islander ☐ Black ☐ Hispanic ☐ Native American ☐ White

4. Age: _____ 5. Birth Date: ___/___/___ ☐ Male ☐ Female

6. Birth Place: ______________ (If you were born in the U.S., go to number 13.)

7. How long have you lived in the U.S.? _______

8. What is your first language? ______________

9. In your first language, can you: Read? ☐ Yes ☐ No
Write? ☐ Yes ☐ No

10. How long did you go to school in your native country? _______

11. In English, can you: Read? ☐ Yes ☐ No
Write? ☐Yes ☐No

12. Do you use English on your job? ☐ Yes ☐ No

When and with whom? ______________________

13. How long did you go to school in the U.S.? _______

14. If you did not graduate, why did you stop going to school? ______________

15. Did you like school? ☐ Yes ☐ No Why or why not? ______________

16. In which areas would you like to do better?
☐ Reading ☐ Writing ☐ Math ☐ Other ______________

17. Would you like take a class for these subjects that would meet here at work?
☐ Yes ☐ No

For Office Use Only
☐ NES ☐ LEP
Pretest Reading ______ Math ______ BEST ___

10/94

INDIVIDUAL EDUCATION PLAN
(I.E.P.)

Name: ______________________ Company: ______________________
Last First
Course: ______________________ Date of Course: ______________________

Why I want to take this course & why I want to improve in this subject:

My strengths:	My weaknesses:
1.	1.
2.	2.
3.	3.

Our class goals:	During Course	End of Course
A)	0 1 2	0 1 2
B)	0 1 2	0 1 2
	0 1 2	0 1 2
Revisions:		

My individual goals:	During Course	End of Course
A)	0 1 2	0 1 2
B)	0 1 2	0 1 2
C)	0 1 2	0 1 2
Revisions:		

To evaluate progress, write: 0 = No Improvement 1 = Some Improvement 2 = Goal Achieved

Other improvements I made:

During course:	End of course:

Instructor's comments:

During course:	End of course:

My comments:

During course:	End of course:

My attendance:

I attended_______________ classes out of_______________ classes total

Percentage of classes attended _______________

(Supervisor's View)

SUPERVISOR EVALUATION: BASIC MATH PRE-SPC

Student ______ Supervisor Steve W

Company ______ Date 3-3-94

Please evaluate this employee to the best of your knowledge. If you are not sure he/she knows a particular math operation, check "Not Observed". If the employee **sometimes** performs the skill, put an "S" in the Most Times column, In the "Comments" section, describe math (or other) skills this employee needs to perform his/her job more competently. Thank you for your help. I will collect this form 3-16-94.

COMPETENCY	MOST TIMES	NO	NOT OBSERVED
Accurately apply: addition of whole numbers	S		
: subtraction of whole numbers	S		
: multiplication of whole numbers	S		
: division of whole numbers	S		
: rounding up/down whole numbers	S		
: rounding up/down decimals			✓
Estimates answers for job related: addition	S		
: subtraction	S		
: multiplication	S		
: division	S		
Understands and expresses decimals in: tenths	S		
: hundredths	S		
: thousandths	S		
: ten-thousandths	S		
Distinguishes the difference between whole numbers, fractions, decimals	S		

COMPETENCY	MOST TIMES	NO	NOT OBSERVED
Accurately applies: addition of decimals			✓
: subtraction of decimals			✓
: multiplication of decimals			✓
: division of decimals			✓
Find the average for a set of ___ numbers			✓
Find the range for a set of ___ numbers			✓
Uses average and range in SPC calculations			✓
Accurately calculates and plots SPC chart			✓
Notes SPC chart trends			✓
Uses calculator key functions: addition			✓
: subtraction			✓
: multiplication			✓
: division			✓
Asks for help on the job	✓		
Asks for help on job related math operations			✓
Other:			
Other:			

COMMENTS:

PRESPC.ADM

INDIVIDUALIZED EDUCATIONAL PLAN
Basic Math Pre-SPC Competency Checklist

Name ______________________ Company ______________________

Pre-evaluation date ______________________ : Use pencil to check the boxes.

Post-evaluation date ______________________ : Use pen to check the boxes

If you can do the math skill check **YES** and give an example in the **EXAMPLE** space provided.
If you can't do the math skill, check **NO**.

COMPETENCY	YES	NO	EXAMPLE
1. Give an example of a whole number, fraction, and a decimal			
2. Add whole numbers			
3. Subtract whole numbers			
4. Write a word problem for adding or subtracting whole numbers			
5. Multiply whole numbers			
6. Divide whole numbers			
7. Round up whole numbers			
8. Round down whole numbers			

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COMPETENCY	YES	NO	EXAMPLE
9. Estimate addition problems			
10. Estimate subtraction problems			
11. Estimate multiplication problems			
12. Estimate division problems			
13.* Change the denominator of two fractions so they are the same			
14.* Add fractions with different denominators			
15.*Subtract fractions with different denominators			
16.*Change a mixed number to an improper fraction			
17.*Multiply fractions			

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COMPETENCY	YES	NO	EXAMPLE
29. Divide decimal numbers			
30. Round up decimal numbers			
31. Round down decimal numbers			
32. Find the average for a set of 5 numbers Circle the median number.			
33 Find the range for the above numbers			
34. Find the average, median, and range for a set of 6 numbers			
35. List several "special causes" that can be found on an SPC chart			
36. Fill in the SPC chart			
37. To add on the calculator I press _____			Draw the symbol of the calculator key
38. To subtract on the calculator I press ____			Draw the symbol

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Pre-asses

INDIVIDUALIZED EDUCATIONAL PLAN
Student Competency Checklist

Name ____________ Company ____________

Date 3-3-99 Course Math (LEP

If you can do the skill, check the Yes box. If you can't do the skill, check the No box. If you marked yes, put an example of the problem in the Example Box.

COMPETENCY	YES	NO	EXAMPLE BOX
1. Give an example of a whole number, fraction, and a decimal	X		7 $\frac{5}{8}$ 5.6
2. Add whole numbers	X		89
3. Subtract whole numbers	X		10 - 5 = 5
4. Write a word problem for adding or subtracting whole numbers		X	
5. Multiply whole numbers	X		8 , 5 = 40
6. Divide whole numbers	X		20 . 5 = 4
7. Round up whole numbers		/	
8. Round up decimals		X	
9. Round down whole numbers		X	

MPETENCY	YES	NO	EXAMPLE BOX
10. Round down decimals		X	
11. Estimate answers for addition		X	
12 Estimate answers for subtraction		X	
13. Estimate answers for multiplication		X	
14. Estimate answers for division		X	
15. Write a decimal which means one-tenth	X		.1
16. Write a decimal which means one-hundredth	X		.01
17. Write a decimal which means one-thousandth	X		.001
18. Write a decimal which means one ten-thousandth	X		.0001
19. Compute the percent of a number		X	
20.* Change the denominator of two fractions so they are the same		X	
21.* Add fractions with different denominators		X	

COMPETENCY	YES	NO	EXAMPLE BOX
22.* Subtract fractions with different denominators		X	
23.* Change a mixed number to an improper fraction		X	
24.* Multiply fractions		X	
25.* Divide fractions		X	
26.* Write a word problem multiplying a fraction with a whole number		X	
27.* Solve the above word problem (show how you get the answer)		X	
28. Add decimal numbers	X		38.87 + 2 5 = 41.37
29. Subtract decimal numbers	X		8.7 - 3.8 = 4.9
30. Multiply decimal numbers	X		4.1 × 3.2 = 13.12
31. Divide decimal numbers	X		2010 05)100.50

COMPETENCY	YES	NO	EXAMPLE BOX
41.* Ask for help if I don't understand class work (who?)			
42.* Ask for help if I don't understand homework (who?)			

Great job! You're almost done.

1. Circle the number of 3 of your YES skills that you think are your best math skills. These are your **strengths**. Do not pick any numbers that have a star (*).

2. Underline 3 of the NO skills you want to improve during the class. These are your **goals**. Do not use any numbers that have a star (*). Write your 3 goals below:

   A. 21

   B. 23

   C. 24

3. Why do you want to take this class?

   Leorn more

PSSURVEY

[illegible]
Post assessm

INDIVIDUALIZED EDUCATIONAL PLAN
Student Competency Checklist

Name ____________ Company ____________

Date 4-14-94 Course Math

If you can do the skill, check the Yes box. If you can't do the skill, check the No box. If you marked yes, put an example of the problem in the Example Box.

COMPETENCY	YES	NO	EXAMPLE BOX
1. Give an example of a whole number, fraction, and a decimal	✓		2 6.9 $\frac{7}{8}$ $\frac{3}{4}$
2. Add whole numbers	✓		4 + 2 = 6
3. Subtract whole numbers	✓		14 - 7 = 7
4. Write a word problem for adding or subtracting whole numbers	✓		
5. Multiply whole numbers	✓		2 × 6 = 12
6. Divide whole numbers	✓		12 ÷ 6 2
7. Round up whole numbers	✓		792 = 8[illegible]
8. Round up decimals	✓		407 ~ 400
9. Round down whole numbers	✓		

COMPETENCY	YES	NO	EXAMPLE BOX
10. Round down decimals	✓		1.12 = 1.
11. Estimate answers for addition	✓		635 + 216 = 851
12 Estimate answers for subtraction	✓		200 - 100 = 100
13. Estimate answers for multiplication	✓		10 × 2 = 20
14. Estimate answers for division	✓		20 ÷ 5 = 4
15. Write a decimal which means one-tenth	✓		.1
16. Write a decimal which means one-hundredth	✓		.01
17. Write a decimal which means one-thousandth	✓		.001
18. Write a decimal which means one ten-thousandth	✓		.0001
19. Compute the percent of a number	✓		10% OF 980 = 98
20* Change the denominator of two fractions so they are the same	✓		$\frac{2}{5}$ $\frac{1}{2}$
21* Add fractions with different denominators			

COMPETENCY	YES	NO	EXAMPLE BOX
32. Find the average for a set of 5 numbers	✓		
33. Find the range and median for the above numbers	✓		
34. Find the mean, median, range for a set of 6 decimal numbers	✓		
35. Identify special causes on SPC chart	✓		
36. Fill in the SPC chart	✓		
37. To add on the calculator I press ________	✓		Draw the symbol
38. To subtract on the calculator I press _____	✓		Draw the symbol
39. To multiply on the calculator I press _____	✓		Draw the symbol
40. To divide on the calculator I press _____	✓		Draw the symbol

COMPETENCY	YES	NO	EXAMPLE BOX
41.* Ask for help if I don't understand class work (who?)	✓		
42.* Ask for help if I don't understand homework (who?)	✓		

Great job! You're almost done.

1. Which of your 3 skills improved? Write them below.

MY English

2. What other skills improved?

Decymals

3. What was most helpful?

GRAPHS

SUPERVISOR EVALUATION: BASIC MATH PRE-SPC

Supervisor ______________________ Student ________________________________

Company ______________________ From ____________ to ____________________

Pre-evaluation date __________________________ : Use pencil to check the boxes.

Post-evaluation date __________________________ : Use pen to check the boxes.

If the employee can perform the math skill write in the **Yes** box, **M** for most times or **S** for sometimes. Check **NO** if he/she cannot do the skill or it is very hard for him to do. Check **NOT SURE** if you don't know whether or hot he/she can perform the math skill.

COMPETENCY	YES	NO	NOT SURE
1. Accurately applies: addition of whole numbers			
2. : subtraction of whole numbers			
3. : multiplication of whole numbers			
4. : division of whole numbers			
5. : rounding (up or down) whole numbers			
6. Estimates answers for job related: addition			
7. : subtraction			
8. : multiplication			
9. : division			
10. Distinguishes the difference between whole numbers, fractions, and decimals			
11. Understands and expresses decimals in: tenths			
12. : hundredths			
13. : thousandths			
14. : ten-thousandths			
15. Accurately applies: addition of decimals			
16. : subtraction of decimals			
17. : multiplication of decimals			
18. : division of decimals			
19. : rounding (up and down) decimals			
20. Finds the average for a set of numbers			

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COMPETENCY	YES	NO	NOT SURE
21. Find the range for a set of numbers			
22. Uses average and range in SPC calculations			
23. Accurately calculates and plots the SPC chart			
24. Notes SPC chart special causes			
25. Uses calculator key functions to: add			
26. : subtract			
27. : multiply			
28. : divide			
29. Asks for help on the job			
30. Asks for help on job-related math operations and charting			
31. Other:			
32. Other			

mathspc.sup

PRE-COURSE OBSERVATIONS

1. What are your expectations of this course for the employee?

2. List special needs the class could address for this individual:

3. What can you do to help?

POST-COURSE OBSERVATIONS

1. What improvements have you noticed? (Give examples if possible)
   a. Math skills
   b. Attitude
   c. Confidence
   d. Job performance

2. What feedback have you gotten from the individual about the course?

3. How were you able to help?

STATISTICS

Please fill this questionnaire out as accurately as you can. The information will help me plan class activities.

1. Name ______________________ 2. Date ______________________

3. Company ______________________ 4. Start date ______________________

5. Department ______________________ 6. Supervisor ______________________

7. Foreman ______________________ 8. Job title ______________________

9. Last year school completed ______ 10. Where ______________________

11. Favorite subject ______________ 12. Hardest subject ______________

13. How do you learn best? Circle the answers that apply: Seeing Doing Listening Reading Writing Reading aloud

14. Tell something unusual about yourself.

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SUPERVISOR CONTACT REPORT

Student ______________________ Supervisor ______________________________

In order for your supervisor to keep up-to-date on what is learned in class, it is your responsibility to explain what you learned in class each week. Your supervisor will sign his name to the chart below to show that you have updated him on class activities. Keeping your supervisor informed is an important part of your job responsibilities.

DATE	ACTIVITY DESCRIPTION	SUPER. SIGNATURE
1: ______________		
2: ______________		
3: ______________		
4: ______________		
5: ______________		
6: ______________		
7: ______________		
8: ______________		
9: ______________		
10: ______________		
11: ______________		

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FITCH & GERARD
PROJECT EASE COMPETENCY CHECKLIST
WORKPLACE ESL I - PHASE II

Literacy/Workplace Skills	50% Accuracy	50%-80% Accuracy	80% + Accuracy
Speaking			
1. Describes path of part	|—	—	→
2. Describes defective product/part	|—	→	
3. Reports on task status		|→	
4. Sells ideas to others	|—	→	
5. Reads Shop Order		|—	→
6. Completes work related forms with correct mechanics: a).	|—	→	
Math			
7. Adds, subtracts, multiples, and divides whole numbers		—	→
8. Calculates averages	—	—	→
9. Converts from inches to millimeters	—	→	
10. Plots items on a graph	—	—	→
Team Skills*			
11. Works cooperatively with others in team or pair practice exercises		—	→
12. Participates equitably in training activities		—	→
13. Respects contributions of others		—	→
14. Performs assigned roles* in group activity: a). Taskmaster/Timekeeper b). Checker/Clarifier b). Encourager/Praiser			
Problem Solving Strategies			
15. Identifies problem	—	—	→
16. Identifies solution	—	—	→
17. Persuades others	—	→	
18. Implements action plans	—	→	
19. Evaluates outcomes	→		
Learning to Learn Strategies			
20. Sets learning goals	—	—	→
21. Monitors progress			
22. Recognizes learning gaps		?	
23. Identifies resources	—	—	→
24. Recognizes achievements	—	—	→

* from Spencer Kagen, Cooperative Learning for Teachers

Final Evaluation Sheet - Course

Company:
Class: VESL II
Student's Name:

1. What are the most important improvements you made in this class?
I SPEAK MORE ENGLISH

2. Where do you still need improvement?
VOCABULARY MATHEMATICS

3. What subjects or activities helped you the most?
Speak more when my BOSS.

4. Did the class help you to meet any of the goals (short or long term) that you wrote at the beginning of the class?
Yes, Because I understond PRINTS MORE than I use to.

5. What are you doing now that you couldn't do before the class started? (Please be specific).
WORKING ON THE MACHINES

6. Has the class made a difference in your job?
Yes, I UNDERSTAND MORE English now.

BEST COPY AVAILABLE

Class Totals

TINGSTOL SHOP READING A T-TH

COMPETENCIES 2:30 - 4:00 P.M.

Name: Shop Reading Class "A"

Competency	0 %	25%	50 %	75%	10
1. Reads and interprets bar charts and line graphs	12 ~~3~~/0	0/1	0/5	0/5	
2. Can describe problem on "blue slip"	0/0	7/0	5/7	0/5	
3. Sequentially describes work routine	0/0	7/0	3/6	2/3	
4. Scans written material for information	12 ~~2~~/0	0/5	0/7	0/0	
5. Skims material for main idea	12/0	0/5	0/7	0/0	
6. Locates information using Table of Contents	6/0	4/0	2/2	0/7	
7. Reads and understands work schedule	0/0	3/0	7/1	2/3	
8. Describes use and function of safety equipment	1/0	4/0	6/2	1~~2~~/3	
9. Understands concept of ISO 9000	12/0	0/4	0/6	0/2	
10. Locates information on grids and charts	3/0	9/0	0/4	0/7	
11. Can follow directions using "before" and "after" (knows which to do first)	4/0	4/3	3/3	1~~4~~/5	
12. Participates equitably in class activities	7/0	6/3	2/2	0/5	

12 students finished the class

Instructor ____________________

Attendance Record

Company ______________________

Course Title __________________

Dates: ___/___/___ to ___/___/___

Names ⬇ Dates ➡																									

Instructor ____________________

Class Demographic Record

Company ______________________

Course Title ________________

Dates: ___/___/___ to ___/___/___

Names	M/F	Completed Course?: Y/N	If completed, Show Improvement? Y/N	Ethnicity	Age	Years Employed	Years of Education

Ethnicity: H= Hispanic, B=Black, A=Asian/Pacific Islander, W=White, N=Native American
Competed Course?: Remember, they must have attended 75% or more to complete the course.
Show Improvement? If they did *not* complete, write "N/A." Write "N" if this student showed no measurable *or* observable gain in skill/ability.

SAMPLE STUDENT EVALUATION OF COURSE
(STRUCTURED)

Student: ________________ Class: English

1. Have you noticed any change in your basic communication skills since the class began? (ability to understand supervisors, coworkers, and them you)

Mastery	Much Improvement	Slight Improvement	No Change	Worse

2. Have you noticed any change in your ability understand written communication and to write?

Mastery	Much Improvement	Slight Improvement	No Change	Worse

3. Have you noticed any change in your willingness to communicate or overall attitude?

Mastery	Much Improvement	Slight Improvement	No Change	Worse

4. Have you noticed any other changes in yourself since this class began? ______________________________

____

____

5. What do you wish this class had studied or spent more time studying? ______________________________

____

____

SAMPLE STUDENT EVALUATION OF COURSE
(UNSTRUCTURED)

- What did you like the most about this class?
- What did you not like?
- What should we have spent more time on?
- What should we have spent less time on?
- What helped you from this class?
- What was not helpful for you?
- What would make a future class better? / If you could change one thing about this class, what would it be?
- What did you learn?
- What are the most important improvements you made in this class
- Where do you still need improvement?
- What are you doing now that you weren't doing before the class?
- How did the class help you do your job better?
- Do you think this class helped the company overall? How?

DOCUMENTATION OF INSTRUCTION

At the end of each cycle of instruction, EASE/SOS instructors will place the following in the STUDENT/COURSE files area:

STUDENT FILES

OLD		NEW	
1.	Personal Data for Assesssment Sheet and Interview Addendum for LEPs	1.	NA: Personal Data for Assessment kept in computer archives
2.	Pre-/post-tests	2.	Optional (e.g. Math Curriculum Toolbox pre-test)
3.	Record of Progress Observed	3.	Competency Checklists: • Self-evaluation • Supv. evaluation • Teacher evaluation
4.	Individual Education Plan	4.	Same (unless part of Competency Checklist)
5.	Student Final Evaluation of Course	5.	Same
6.	Copies of any logs, journals or feedback sheets used	6.	Copies of any work which documents the attainment of distinct competencies (e.g. 1 math, 1 reading, 1 writing, 1 team skill competency)
7.	Copies of any written work done by student		---
8.	Any relevant anecdotes		---

COURSE FILES

OLD		NEW	
1.	Curriculum outline by week, indicating which items were class goals	1.	Same
2.	Daily lesson plans	2.	Same
3.	Brief summaries of: • student performance/ improvement • student evaluation of course • course impact	3.	Same
4.	Attendance Record	4.	Same
5.	Any relevant anecdotes	5.	Class Demographic Record (Temporary accommodation)

2/94

EASE INSTRUCTOR COMPETENCY CHECKLIST

COMPETENCY	YES	NO	NOT AP. NOT OBS.
THEORY			
Can state principles of:			
1. Adult learning			
2. Second language acquisition			
3. Contextualized learning			
4. Cognitive development (Gardner, de Bono, Feuerstein)			
5. Learner-centered instruction			
6. Learning strategy training			
7. Cooperative learning			
8. Nested curriculum design			
Can identify/explain:			
9. Critical thinking skills			
10. Creative thinking skills			
11. Three key graphic organizers			
APPLICATION			
12. Plans/implements 4-part lesson (Introduction/Practice/ Application/Evaluation)			
13. Develops lesson around work-related competency			
14. Nests thinking skills, team skills, and/or graphic organizers in lesson			
15. Integrates student (IEP) goals into instruction			

16. Varies groupings (large, small, pairs)			
17. Employs multi-sensory techniques			
18. Varies types of evaluation (self, peer, teacher)			
19. Teaches learning strategies			

Instructor name:__________________________ Date:____________

Self-evaluation:_____

Evaluation by other:_____ Name: __________________________________

Directions: For each question, circle yes or no to indicate whether you observed the behavior. If observed, indicate what was observed by marking the appropriate boxes and citing examples.

7. Did the instructor provide materials to guide the practice?	YES	NO
authentic vocational/workplace materials	___	
aural	___	
print	___	
other ______________________	___	
8. Did the instructor provide an opportunity for students to apply the material in a new situation relevant to their vocational classes or future work roles?	YES	NO
by having students provide response based on their own experience	___	
by having students interact with each other using their own words	___	
other ______________________	___	
9. Did the instructor assess individuals on attainment of the objective?	YES	NO
through demonstrated performance in a job role	___	
through performance on a written assignment or test	___	
through completion of a vocational class assignment	___	

Developed by Kate Silc - Project CBS

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FEEDBACK FORM: VESL

Directions: For each question, circle yes or no to indicate whether you observed the behavior. If observed, indicate what was observed by marking the appropriate boxes and citing examples.

1. Did the instructor base the lesson on vocational competencies or workplace situations? YES NO

by incorporating vocational content ___

by adapting the collected workplace forms & other materials ___

other ______________________ ___

2. Does the instruction increase the learner's ability to meet the requirements of the vocational class and/or the job? YES NO

in reading ___
in writing ___
in speaking ___
in cultural understanding ___
in listening comprehension ___
in vocabulary ___
in grammar ___

3. Was the purpose of the language instruction clear? If so, what was it? YES NO

to comprehend vocational lectures ___

to take needed exams or certification tests ___

to acquire job-seeking language ___

to read new technical materials ___

to ask for clarification or verify comprehension ___

to communicate on the job to co-workers, supervisors, and public ___

4. Did the instructor present new material? YES NO

by using or adapting vocational or workplace realia ___

by eliciting ideas or information related to students' vocational training ___

other ______________________ ___

5. Did the instructor provide activities for students to practice the new material/language? YES NO

in whole group ___

in small groups ___

in pairs ___

individually ___

other ______________________ ___

6. Did the instructor provide practice activities for more than one learning style? YES NO

kinesthetic/tactile (physical response) ___

aural ___

oral ___

written ___

Workplace Instructional Staff Evaluation

Name: ______________________________

Date: ______________________________

Job Title: ______________________________

Purpose of this Employee Evaluation:

To take a personal inventory, to pin-point weaknesses and strengths and to outline and agree upon a practical and enriching development program. Periodically conducted, these Evaluations will provide a history of personal and professional growth.

Instructions:

Listed below are a number of traits, abilities and characteristics that are important for success in workplace literacy projects. Place an X mark on each rating scale, over the descriptive phrase which most nearly describes the person being rated.

Carefully evaluate each of the qualities separately.

Two common mistakes in rating are: (1) a tendency to rate nearly everyone as "average" on every trait instead of being more critical in judgement. The rater should use the ends as well as the middle, and (2) the "Halo Effect," i.e. a tendency to rate the same individual "excellent" on every trait or "poor" on every trait based on the overall picture one has of the person being rated. However, each person has strong points and weak points and these should be indicated on the rating scale.

Understanding of Project Mission/Corporate Assignment

________	________	________	________	________
Demonstrates little or no understanding of assignment / missions.	Requires more than average explanation of philosophy, goals, corporate client needs.	Grasps with monitoring / supervision.	Usually quick to understand with little supervision.	Anticipates purpose, elements & problems of assignment involved with no supervision.

Knowledge of Instructional Content

________	________	________	________	________
Poorly informed about content area,	Lacks knowledge of some phases of content.	Moderately informed; can answer most common questions.	Understands all phases of content.	Has complete mastery of all phases of content

Knowledge of Instructional Techniques

________	________	________	________	________
Demonstrates inappropriate techniques wholly	Demonstrates limited range of appropriate techniques	Demonstrates moderate range of techniques	Demonstrates above average range of techniques	Demonstrates wide range of wholly appropriate techniques

Pursuit of Professional Growth

Rarely seeks out professional growth opportunities	Attends professional growth opportunities if directed	Occasionally seeks out or inquires about growth opportunities.	Frequently seeks out or inquires about growth opportunities.	Seeks out professional growth opportunities as participant and presenter.

Documentation of Student Progress and Training Delivery

Does not submit documentation or submits it late or in unacceptable form.	Submits documentation late or in marginally unacceptable form.	Submits documentation that is satisfactory in completeness and timeliness.	Submits documentation that is above average in completeness and timeliness.	Productively submits documentation that is complete, legible and well organized.

Flexibility/ Adaptability

Has great difficulty in adapting to variety in worksite assignments & learner needs	Has moderately difficulty in meeting learner needs and coping with a variety of worksite environments	Adjusts to new client/learner needs with minimal adjustment and direction	Quickly comfortable with a variety of worksite environments, corporate cultures and learner needs.

Professional Appearance

Personal hygiene problematic and/or inappropriately attired	Usually clean, neat & acceptably attired	Consistently well groomed and appropriately attired

Relationship with Students

Lacks rapport with participants; techniques do not foster learner independence	Establishes rapport with participants; usually encourages learner independence	Quickly establishes rapport with majority of participants; consistently fosters high degree of learner independence

Relationship with Peers

Rarely shares information and resources or accepts others suggestions	Shares information & resources when invited or directed; open to suggestions	Actively shares information & resources; solicits suggestions of others

Relationship with Corporate Clients

Rarely interacts with corporate contact; identifies as autonomous agent	Reports occasionally to corporate contact; refers non-instructional questions appropriately; respects proprietary rights	Routinely initiates contact with client; responds to non-instructional questions appropriate to project policy & corporate culture. Identifies as service provider in corporate environment

Accessibility for Project Management

____________	____________	____________
Is frequently unavailable during business hours; makes limited or vague reports. If salaried: moonlights during business hours.	Keeps office appraised of schedule; routinely reports when contacted	Initiates contact wit office; makes self easily and readily accessible during non-instructional business hours

Attendance\Punctuality (Corporate assignments, staff meetings)

____________	____________
Misses days and/or comes late and/or leaves early	Is punctual for field assignments; is routinely on time for and stays through entirety of staff meetings and in-house assignments

OVERALL EVALUATION

________	________	________	________	________
Definitely unsatisfactory	Substandard but making progress	Doing an average job	Definitely above average	Outstanding

COMMENTS

Needs Additional Attention	Major Strong Points Are -
1. ____________	1. ____________
2. ____________	2. ____________
3. ____________	3. ____________
and these can be strengthened by doing the following:	and these can be used more effectively by doing the following:
____________ ____________ ____________ ____________ ____________ ____________ ____________ ____________ ____________ ____________ ____________	____________ ____________ ____________ ____________ ____________ ____________ ____________ ____________ ____________ ____________ ____________

Rated by ______________________________ ______________________________
(Name) (Title)

A copy of this report has been given to me and has been discussed with me

______________________________ ______________________________
(Name) (Date)

Appendix C

Pre- and Post-Test Data Analysis

OAI Pre- and Post-Test
Data Analysis

Participants:	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Demographics:							
Ethnicity	b	h	w	w	h	w	h
No. Yrs. w/ Co.	11	6	5	20	17	17	9
Age	32	35	32	61	41	49	36
Gender	m	m	m	m	m	f	m
Educ. Level	12	8	10	5	6	10	12
PreTest Scores:							
TABE Reading							
TABE Math	6	7.2	6.7	6.3	6.8	5.8	5.8
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	7.9	9.3	9.3	6.7	7.3	7.3	7.5
BEST							
Pre/Post Test Gains:							
Grade level gain	1.9	2.1	2.6	0.4	0.5	1.5	1.7
Raw score gain							
percentage of gain	31.67%	29.17%	38.81%	6.35%	7.35%	25.86%	29.31%
Company	Admiral Tool & Manufacturing						

Participants:	**257**	**258**	**259**	**260**	**261**	**262**	**263**
Demographics:							
Ethnicity	w	h	h	h	h	h	h
No. Yrs. w/ Co.	1	0.33	0.2	0.25	5	0.1	2
Age	36	38	34	43	39	27	39
Gender	m	m	m	f	m	m	f
Educ. Level	12	5	1	5	2	9	2
PreTest Scores:							
TABE Reading							
TABE Math							
BEST	4	2	15	5	10	14	14
PostTest Scores:							
TABE Reading							
TABE Math							
BEST	9	16	39	11	16	36	14
Pre/Post Test Gains:							
Grade level gain							
Raw score gain	5	14	24	6	6	22	0
percentage of gain	125.00%	700.00%	160.00%	120.00%	60.00%	157.14%	0.00%
Company	Parkview Metal Products						

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OAI Pre- and Post-Test
Data Analysis

Participants:	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Demographics:							
Ethnicity	w	h	h	h	h	h	h
No. Yrs. w/ Co.	0.5	9	12	12	12	13	9
Age	53	37	30	33	31	36	30
Gender	m	m	m	m	m	m	m
Educ. Level	10	12	12	12	12	5	13
PreTest Scores:							
TABE Reading							
TABE Math	6.5	7	6.3	6.9	5.5	6.9	6.5
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	9.1	12.9	10.6	8.4	6.3	7.2	12.9
BEST							
Pre/Post Test Gains:							
Grade level gain	2.6	5.9	4.3	1.5	0.8	0.3	6.4
Raw score gain							
percentage of gain	40.00%	84.29%	68.25%	21.74%	14.55%	4.35%	98.46%
Company							
Participants:	**264**	**265**	**266**	**267**	**268**	**269**	**270**
Demographics:							
Ethnicity	h	h	w	h	w	h	h
No. Yrs. w/ Co.	6	0.6	10	0.1	0.25	6	11
Age	42	37	55	38	36	41	39
Gender	m	m	m	f	m	m	f
Educ. Level	2	10	11	6	10	7	2
PreTest Scores:							
TABE Reading							
TABE Math							
BEST	12	4	15	7	17	26	14
PostTest Scores:							
TABE Reading							
TABE Math							
BEST	33	13	20	27	38	38	22
Pre/Post Test Gains:							
Grade level gain							
Raw score gain	21	9	5	20	21	12	8
percentage of gain	175.00%	225.00%	33.33%	285.71%	123.53%	46.15%	57.14%
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	**15**	**16**	**17**	**18**	**19**	**20**	**21**
Demographics:							
Ethnicity	h	h	h	h	b	w	h
No. Yrs. w/ Co.	26	12	9	12	11	5	12
Age	62	30	30	31	32	32	33
Gender	f	m	m	m	m	m	m
Educ. Level	14	12	13	12	12	10	12
PreTest Scores:							
TABE Reading							
TABE Math	5.6	6.3	6.5	5.5	6	5.7	6.9
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	7.5	10.6	12.9	6.3	7.9	9.3	8.4
BEST							
Pre/Post Test Gains:							
Grade level gain	1.9	4.3	6.4	0.8	1.9	3.6	1.5
Raw score gain							
percentage of gain	33.93%	68.25%	98.46%	14.55%	31.67%	63.16%	21.74%
Company							

Participants:	**271**	**272**	**273**	**274**	**275**	**276**	**277**
Demographics:							
Ethnicity	w	w	h	h	h	h	h
No. Yrs. w/ Co.	4	3	0.25	2	7	2	7.5
Age	46	55	57	32	39	27	45
Gender	m	f	m	f	m	f	f
Educ. Level	12	11	6	6	6	9	6
PreTest Scores:							
TABE Reading							
TABE Math							
BEST	27	29	33	33	30	33	33
PostTest Scores:							
TABE Reading							
TABE Math							
BEST	40	37	37	39	36	55	52
Pre/Post Test Gains:							
Grade level gain							
Raw score gain	13	8	4	6	6	22	19
percentage of gain	48.15%	27.59%	12.12%	18.18%	20.00%	66.67%	57.58%
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	**22**	**23**	**24**	**25**	**26**	**27**	**28**
Demographics:							
Ethnicity	h	h	h	h	h	w	w
No. Yrs. w/ Co.	6	13	9	9	17	17	0.5
Age	35	36	36	37	41	49	53
Gender	m	m	m	m	m	f	m
Educ. Level	8	5	12	12	6	10	10
PreTest Scores:							
TABE Reading							
TABE Math	7.2	6.9	5.8	7	6.8	5.8	5.5
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	9.3	7.2	7.5	12.9	7.3	7.3	9.1
BEST							
Pre/Post Test Gains:							
Grade level gain	2.1	0.3	1.7	5.9	0.5	1.5	3.6
Raw score gain							
percentage of gain	29.17%	4.35%	29.31%	84.29%	7.35%	25.86%	65.45%
Company							

Participants:	**278**	**279**	**280**	**281**	**282**	**283**	**284**
Demographics:							
Ethnicity	h	w	w	h	b	h	h
No. Yrs. w/ Co.	5	14	6	4	2	2	1
Age	38	49	58	23	25	29	36
Gender	f	f	m	m	m	m	m
Educ. Level	9	11	7	12	13	16	9
PreTest Scores:							
TABE Reading							
TABE Math				6.6	3.6	7	5.4
BEST	25	32	20				
PostTest Scores:							
TABE Reading							
TABE Math				12.9	10.6	12.9	12.9
BEST	60	43	20				
Pre/Post Test Gains:							
Grade level gain				6.3	7	5.9	7.5
Raw score gain	35	11	0				
percentage of gain	140.00%	34.38%	0.00%	95.45%	194.44%	84.29%	138.89%
Company				Chicago White Metal Casting			

OAI Pre- and Post-Test
Data Analysis

Participants:	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Demographics:							
Ethnicity	w	h	h	h	h	h	h
No. Yrs. w/ Co.	20	26	12	9	9	11	12
Age	61	62	21	30	31	31	33
Gender	m	f	m	m	f	m	m
Educ. Level	5	14	7	0	10	12	3
PreTest Scores:							
TABE Reading							
TABE Math	6.3	5.6	4.7	4.7	6	5.4	4.5
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	6.7	7.5	7	6.3	6.7	4.7	6.3
BEST							
Pre/Post Test Gains:							
Grade level gain	0.4	1.9	2.3	1.6	0.7	-0.7	1.8
Raw score gain							
percentage of gain	6.35%	33.93%	48.94%	34.04%	11.67%	-12.96%	40.00%
Company							

Participants:	**285**	**286**	**287**	**288**	**289**	**290**	**291**
Demographics:							
Ethnicity	w	b	w	w	w	w	w
No. Yrs. w/ Co.	1	23	9	17	3	2	7
Age	40	51	56	38	30	33	32
Gender	m	m	m	m	m	m	m
Educ. Level	15	12	12	13	12	11	12
PreTest Scores:							
TABE Reading							
TABE Math	7.8	5.2	6.3	7.3	4.8	6.8	5.6
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	12.9	11.5	12.9	12.9	12.9	12.9	12.9
BEST							
Pre/Post Test Gains:							
Grade level gain	5.1	6.3	6.6	5.6	8.1	6.1	7.3
Raw score gain							
percentage of gain	65.38%	121.15%	104.76%	76.71%	168.75%	89.71%	130.36%
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	**36**	**37**	**38**	**39**	**40**	**41**	**42**
Demographics:							
Ethnicity	h	h	h	h	h	h	h
No. Yrs. w/ Co.	9	15	9	9	12	20	15
Age	35	35	37	37	39	42	48
Gender	m	m	f	m	m	m	m
Educ. Level	6	6	9	12	6	6	5
PreTest Scores:							
TABE Reading							
TABE Math	4.5	6	6	6.5	6	6.9	6.3
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	5.4	6.5	7.3	7.3	7.3	10.6	5.4
BEST							
Pre/Post Test Gains:							
Grade level gain	0.9	0.5	1.3	0.8	1.3	3.7	-0.9
Raw score gain							
percentage of gain	20.00%	8.33%	21.67%	12.31%	21.67%	53.62%	-14.29%
Company							

Participants:	**292**	**293**	**294**	**295**	**296**	**297**	**298**
Demographics:							
Ethnicity	h	b	h	w	w	w	h
No. Yrs. w/ Co.	1	2	15	2	4	1	1
Age	20	38	40	45	55	49	27
Gender	m	m	m	f	m	f	f
Educ. Level	14	12	7	14	11	10	15
PreTest Scores:							
TABE Reading							
TABE Math	7.8	5.6	4.4	5.8	5.1	3.6	7.3
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	12.9	10.6	8.8	12.9	12.9	8.8	12.9
BEST							
Pre/Post Test Gains:							
Grade level gain	5.1	5	4.4	7.1	7.8	5.2	5.6
Raw score gain							
percentage of gain	65.38%	89.29%	100.00%	122.41%	152.94%	144.44%	76.71%
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	43	**44**	45	**46**	47	**48**	49
Demographics:							
Ethnicity	h	w	w	w	w	w	w
No. Yrs. w/ Co.	16	8	40	10	7	5	4
Age	58	65	58	47	39	31	30
Gender	m	m	m	f	f	f	m
Educ. Level	5	12	5	12	11	8	11
PreTest Scores:							
TABE Reading							
TABE Math	6						
BEST		29	16	23	13	30	27
PostTest Scores:							
TABE Reading							
TABE Math	6.9						
BEST		58	23	43	51	47	58
Pre/Post Test Gains:							
Grade level gain	0.9						
Raw score gain		29	7	20	38	17	31
percentage of gain	15.00%	100.00%	43.75%	86.96%	292.31%	56.67%	114.81%
Company		Dudek & Bock					

Participants:	**299**	**300**	**301**	**302**	**303**	**304**	**305**
Demographics:							
Ethnicity	h	w	w	w	w	h	w
No. Yrs. w/ Co.	9	12	2	2	6	13	4
Age	50	39	42	27	32	30	22
Gender	m	m	m	m	m	f	m
Educ. Level	7	12	11	13	11	9	12
PreTest Scores:							
TABE Reading							
TABE Math	4.1	7.6	5.6	6.6	4.9	5.1	7.3
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	9.3	12.9	12.9	8.8	12.9	12.9	12.9
BEST							
Pre/Post Test Gains:							
Grade level gain	5.2	5.3	7.3	2.2	8	7.8	5.6
Raw score gain							
percentage of gain	126.83%	69.74%	130.36%	33.33%	163.27%	152.94%	76.71%
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	**50**	**51**	**52**	**53**	**54**	**55**	**56**
Demographics:							
Ethnicity	h	w	w	w	w	w	w
No. Yrs. w/ Co.	8	6	4	5	5	14	28
Age	36	36	58	60	48	59	57
Gender	f	m	m	m	f	m	m
Educ. Level	7	11	7	7	9	7	11
PreTest Scores:							
TABE Reading							
TABE Math							
BEST	35	20	14	13	20	20	36
PostTest Scores:							
TABE Reading							
TABE Math							
BEST	51	57	24	17	28	43	24
Pre/Post Test Gains:							
Grade level gain							
Raw score gain	16	37	10	4	8	23	-12
percentage of gain	45.71%	185.00%	71.43%	30.77%	40.00%	115.00%	-33.33%
Company							

Participants:	**306**	**307**	**308**	**309**	**310**		
Demographics:							
Ethnicity	h	h	w	h	h		
No. Yrs. w/ Co.	1	2	1	2	4		
Age	25	31	26	29	39		
Gender	m	m	m	m	f		
Educ. Level	3	5	12	8	16		
PreTest Scores:							
TABE Reading							
TABE Math	5	3.8	7	3.8	7		
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	8.8	7.9	12.9	9.1	12.9		
BEST							
Pre/Post Test Gains:							
Grade level gain	3.8	4.1	5.9	5.3	5.9		
Raw score gain							
percentage of gain	76.00%	107.89%	84.29%	139.47%	84.29%		
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	57	58	59	60	61	62	63
Demographics:							
Ethnicity	w	w	w	w	h	h	h
No. Yrs. w/ Co.	14	9	13	9	13	6	6
Age	40	62	49	65	32	31	23
Gender	f	m	f	m	m	m	m
Educ. Level	8	7	7	11	5	6	6
PreTest Scores:							
TABE Reading							
TABE Math							
BEST	16	23	26	26	21	24	53
PostTest Scores:							
TABE Reading							
TABE Math							
BEST	27	17	25	14	20	26	8
Pre/Post Test Gains:							
Grade level gain							
Raw score gain	11	-6	-1	-12	-1	2	-45
percentage of gain	68.75%	-26.09%	-3.85%	-46.15%	-4.76%	8.33%	-84.91%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	64	65	66	67	68	69	70
Demographics:							
Ethnicity	w	w	w	a	w	h	w
No. Yrs. w/ Co.	19	16	28	3	8	9	40
Age	51	58	64	39	65	31	58
Gender	f	m	m	f	m	f	m
Educ. Level	7	7	7	4	12	8	5
PreTest Scores:							
TABE Reading							
TABE Math							
BEST	25	17	16	49	58	29	23
PostTest Scores:							
TABE Reading							
TABE Math							
BEST	21	27	25	49	55	39	24
Pre/Post Test Gains:							
Grade level gain							
Raw score gain	-4	10	9	0	-3	10	1
percentage of gain	-16.00%	58.82%	56.25%	0.00%	-5.17%	34.48%	4.35%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	71	72	73	74	75	76	77
Demographics:							
Ethnicity	w	a	w	w	h	w	a
No. Yrs. w/ Co.	10	1	7	5	8	6	3
Age	47	40	39	31	36	36	31
Gender	f	m	f	f	f	m	m
Educ. Level	12	16	11	8	7	11	9
PreTest Scores:							
TABE Reading							
TABE Math							
BEST	43	64	51	47	51	57	53
PostTest Scores:							
TABE Reading							
TABE Math							
BEST	40	66	44	42	51	51	66
Pre/Post Test Gains:							
Grade level gain							
Raw score gain	-3	2	-7	-5	0	-6	13
percentage of gain	-6.98%	3.13%	-13.73%	-10.64%	0.00%	-10.53%	24.53%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	78	79	80	81	82	83	84
Demographics:							
Ethnicity	w	w	h	h	h	h	a
No. Yrs. w/ Co.	5	14	7	10	5	5	2
Age	48	59	29	33	35	38	46
Gender	f	m	m	m	m	m	f
Educ. Level	9	7	10	5	9	6	12
PreTest Scores:							
TABE Reading							
TABE Math			2.3	4.8	0	3.2	
BEST	28	43					43
PostTest Scores:							
TABE Reading							
TABE Math			5.7	8.3	9.7	7	
BEST	28	33					38
Pre/Post Test Gains:							
Grade level gain			3.4	3.5	9.7	3.8	
Raw score gain	0	-10					-5
percentage of gain	0.00%	-23.26%	147.83%	72.92%	0.00%	118.75%	-11.63%
Company			Tru-Die				DieMaste
Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	85	86	87	88	89	90	91
Demographics:							
Ethnicity	a	a	a	a	a	a	a
No. Yrs. w/ Co.	3	11	10	8	6	13	7
Age	27	56	37	29	55	57	30
Gender	m	m	m	m	m	m	m
Educ. Level	12	12	13	8	13	6	8
PreTest Scores:							
TABE Reading							
TABE Math							
BEST	76	43	81	79	41	61	69
PostTest Scores:							
TABE Reading							
TABE Math							
BEST	80	59	81	80	50	52	68
Pre/Post Test Gains:							
Grade level gain							
Raw score gain	4	16	0	1	9	-9	-1
percentage of gain	5.26%	37.21%	0.00%	1.27%	21.95%	-14.75%	-1.45%
Company	s						

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	92	93	94	95	96	97	98
Demographics:							
Ethnicity	a	h	h	h	a	w	h
No. Yrs. w/ Co.	1	3	3	3	13	6	2
Age	46	44	29	29	35	50	22
Gender	m	f	f	f	m	f	
Educ. Level	14	9	15	11	9	12	12
PreTest Scores:							
TABE Reading		5.3	11.3	8.8	4.9	6.3	
TABE Math							7.1
BEST	60						
PostTest Scores:							
TABE Reading		7.5	12.9	12.9	7.7	10.4	
TABE Math							12.9
BEST	81						
Pre/Post Test Gains:							
Grade level gain		2.2	1.6	4.1	2.8	4.1	5.8
Raw score gain	21						
percentage of gain	35.00%	41.51%	14.16%	46.59%	57.14%	65.08%	81.69%
Company							WireForme

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	99	100	101	102	103	104	105
Demographics:							
Ethnicity	h	h	w	h	h	h	h
No. Yrs. w/ Co.	1	3	3.5	2	2	1	2
Age	28	32	40	43	48	50	55
Gender				m	m	m	m
Educ. Level	13	12	16	2	4	0	5
PreTest Scores:							
TABE Reading							
TABE Math	5.2	5	5.3				
BEST				12	12	1	14
PostTest Scores:							
TABE Reading							
TABE Math	6.2	8.9	8.3				
BEST				21	26	5	23
Pre/Post Test Gains:							
Grade level gain	1	3.9	3				
Raw score gain				9	14	4	9
percentage of gain	19.23%	78.00%	56.60%	75.00%	116.67%	400.00%	64.29%
Company	ers						

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	106	107	108	109	110	111	112
Demographics:							
Ethnicity	h	h	h	h	h	h	h
No. Yrs. w/ Co.	1	0.5	2	1	3	3	4
Age	22	22	22	24	25	27	30
Gender	m	m	m	m	m	m	m
Educ. Level	6	9	12	9	0	11	6
PreTest Scores:							
TABE Reading							
TABE Math							
BEST	4	58	60	74	71	59	48
PostTest Scores:							
TABE Reading							
TABE Math							
BEST	42	70	81	80	72	76	56
Pre/Post Test Gains:							
Grade level gain							
Raw score gain	38	12	21	6	1	17	8
percentage of gain	950.00%	20.69%	35.00%	8.11%	1.41%	28.81%	16.67%
Company	Fitch & Gerard						

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	113	114	115	116	117	118	119
Demographics:							
Ethnicity	h	h	w	w	w	w	w
No. Yrs. w/ Co.	4	1	0.25	0.1	0.5	0.5	3
Age	51	71	21	24	26	27	29
Gender	m	m	f	f	f	f	f
Educ. Level	6	12	10	12	12	14	12
PreTest Scores:							
TABE Reading							
TABE Math			6.5	8.3	8.7	9.7	6.7
BEST	36	25					
PostTest Scores:							
TABE Reading							
TABE Math			6	10.6	7.7	11.5	8,6
BEST	49	65					
Pre/Post Test Gains:							
Grade level gain			-0.5	2.3	-1	1.8	1.9
Raw score gain	13	40					
percentage of gain	36.11%	160.00%	-7.69%	27.71%	-11.49%	18.56%	28.36%
Company			Panduit				

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	120	121	122	124	125	126	127
Demographics:							
Ethnicity	w	w	w	w	b	b	b
No. Yrs. w/ Co.	0.5	0.5		0.3	0.5	0.5	0.75
Age	30	40	45	29	19	20	20
Gender	f	f	f	m	m	m	m
Educ. Level	12	12	12	12	12	12	12
PreTest Scores:							
TABE Reading							
TABE Math	7.4	9.3	6.7	9	6.9	7.4	8.3
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	7.7	12.9	7	12.9	7.7	8.8	11.5
BEST							
Pre/Post Test Gains:							
Grade level gain	0.3	3.6	0.3	3.9	0.8	1.4	3.2
Raw score gain							
percentage of gain	4.05%	38.71%	4.48%	43.33%	11.59%	18.92%	38.55%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

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OAI Pre- and Post-Test
Data Analysis

Participants:	128	129	130	131	132	133	134
Demographics:							
Ethnicity	b	w	w	b	b	w	h
No. Yrs. w/ Co.	0.3	0.4	0.5	2	2	4	6
Age	20	20	20	22	24	25	25
Gender	m	m	m	m	m	f	m
Educ. Level	13	12	12	12	14	12	12
PreTest Scores:							
TABE Reading							
TABE Math	10.9	8.3	8.7	8.3	8.7	7.9	8.1
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	12.9	11.5	8.6	9.3	9.1	10.6	9.3
BEST							
Pre/Post Test Gains:							
Grade level gain	2	3.2	-0.1	1	0.4	2.7	1.2
Raw score gain							
percentage of gain	18.35%	38.55%	-1.15%	12.05%	4.60%	34.18%	14.81%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	135	136	137	138	139	140	141
Demographics:							
Ethnicity	h	b	b	w	w	w	
No. Yrs. w/ Co.		4	0.5	0.75	18	0.5	
Age	27	30	35	38	39	45	
Gender	m	f	f	f	m	m	f
Educ. Level		13	12	12	12	12	
PreTest Scores:							
TABE Reading							6.2
TABE Math	8.6	6.7	9.7	12.9	8.7	12.9	
BEST							
PostTest Scores:							
TABE Reading							5.7
TABE Math	12.9	9.1	12.9	12.9	9.3	12.9	
BEST							
Pre/Post Test Gains:							
Grade level gain	4.3	2.4	3.2	0	0.6	0	-0.5
Raw score gain							
percentage of gain	50.00%	35.82%	32.99%	0.00%	6.90%	0.00%	-8.06%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	**142**	**143**	**144**	**145**	**146**	**147**	**148**
Demographics:							
Ethnicity		h	w	w	w		w
No. Yrs. w/ Co.		4			2		10
Age							
Gender	f	f	f	f	f	m	m
Educ. Level		12			12		12
PreTest Scores:							
TABE Reading	7.3	8.2	5.7	10.9	8.7	10.4	7.3
TABE Math							
BEST							
PostTest Scores:							
TABE Reading	10.6	12.1	8.1	12.9	8.6	11.3	8.6
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain	3.3	3.9	2.4	2	-0.1	0.9	1.3
Raw score gain							
percentage of gain	45.21%	47.56%	42.11%	18.35%	-1.15%	8.65%	17.81%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	**149**	**150**	**151**	**152**	**153**	**154**	**155**
Demographics:							
Ethnicity	w		w	b	w	b	w
No. Yrs. w/ Co.	1	2	3	3	3	8	2
Age	21	22	22	22	24	25	25
Gender	f	m	m	m	m	f	f
Educ. Level	14	12	12	12	12	12	12
PreTest Scores:							
TABE Reading	12.7	6.4	12.7	7.1	12.9	7.3	11.1
TABE Math							
BEST							
PostTest Scores:							
TABE Reading	10.6	10.6	12.9	5.5	12.9	8.1	8.6
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain	-2.1	4.2	0.2	-1.6	0	0.8	-2.5
Raw score gain							
percentage of gain	-16.54%	65.63%	1.57%	-22.54%	0.00%	10.96%	-22.52%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test Data Analysis

Participants:	157	158	159	160	161	162	163
Demographics:							
Ethnicity	h	b	w	w	w	w	w
No. Yrs. w/ Co.	4.5	6	4	0.5	0.25	3	1
Age	26	27	27	27	29	29	29
Gender	m	m	m	m	f	f	m
Educ. Level	13	12	13	14	12	12	
PreTest Scores:							
TABE Reading	10.9	8.4	8.7	12.9	7.9	10.9	12.9
TABE Math							
BEST							
PostTest Scores:							
TABE Reading	12.9	9.6	9.2	12.9	8.6	12.9	12.9
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain	2	1.2	0.5	0	0.7	2	0
Raw score gain							
percentage of gain	18.35%	14.29%	5.75%	0.00%	8.86%	18.35%	0.00%
Company							
Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	**164**	**165**	**166**	**167**	**168**	**169**	**170**
Demographics:							
Ethnicity	w	b	w	w	w	w	w
No. Yrs. w/ Co.	2	12	1	3	13	0.25	5
Age	29	30	30	32	32	32	32
Gender	m	f	m	f	f	f	m
Educ. Level	12	12	13	11	12	14	13
PreTest Scores:							
TABE Reading	9.6	8.2	7.7	8.7	12.7	12.9	7.3
TABE Math							
BEST							
PostTest Scores:							
TABE Reading	12.9	11.3	7.9	9.6	9.2	10.6	8.6
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain	3.3	3.1	0.2	0.9	-3.5	-2.3	1.3
Raw score gain							
percentage of gain	34.38%	37.80%	2.60%	10.34%	-27.56%	-17.83%	17.81%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	171	172	173	174	175	176	177
Demographics:							
Ethnicity	w	w	h	b	w	w	w
No. Yrs. w/ Co.	0.25	5	0.5	4	1	13	2.5
Age	33	33	33	34	34	34	34
Gender	f	f	m	f	f	f	m
Educ. Level	4	12	13	12	12	13	14
PreTest Scores:							
TABE Reading	11.3	7.7	10.6	5.7	9.6	6.7	12.7
TABE Math							
BEST							
PostTest Scores:							
TABE Reading	12.9	9.6	12.9	7.9	12.9	8.3	9.6
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain	1.6	1.9	2.3	2.2	3.3	1.6	-3.1
Raw score gain							
percentage of gain	14.16%	24.68%	21.70%	38.60%	34.38%	23.88%	-24.41%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	178	179	180	181	182	183	184
Demographics:							
Ethnicity	w	w	w	w	b	w	w
No. Yrs. w/ Co.	4	16	3	5	15	3	9
Age	35	35	36	36	36	37	37
Gender	f	m	f	f	m	f	f
Educ. Level	12	12	12	14	12	12	12
PreTest Scores:							
TABE Reading	10.9	10.4	10.9	9.6	12.9	8.2	10.9
TABE Math							
BEST							
PostTest Scores:							
TABE Reading	12.9	9.2	12.9	12.9	12.9	12.9	12.9
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain	2	-1.2	2	3.3	0	4.7	2
Raw score gain							
percentage of gain	18.35%	-11.54%	18.35%	34.38%	0.00%	57.32%	18.35%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	185	186	187	188	189	190	191
Demographics:							
Ethnicity		w	w	w	w	b	h
No. Yrs. w/ Co.	5	0.5	2.5	21	2.5	2	3
Age	38	38	40	40	43	43	46
Gender	m	m	f	m	f	m	f
Educ. Level	13	14	12	12	12	12	12
PreTest Scores:							
TABE Reading	6.7	12.9	11.1	11.3	12.9	9.6	8.2
TABE Math							
BEST							
PostTest Scores:							
TABE Reading	9.2	9.6	12.9	12.9	12.9	9.2	11.3
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain	2.5	-3.3	1.8	1.6	0	-0.4	3.1
Raw score gain							
percentage of gain	37.31%	-25.58%	16.22%	14.16%	0.00%	-4.17%	37.80%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	192	193	194	195	196	197	198
Demographics:							
Ethnicity	w	w	b	w	w	w	
No. Yrs. w/ Co.	6	27.5	13	1	5	16	
Age	48	48	50	52	55	57	
Gender	f	m	f	m	f	m	f
Educ. Level	12	12	14	12	12	8	
PreTest Scores:							
TABE Reading	10.9	11.1	10.4	12.9	10.9	7.5	
TABE Math							2.9
BEST							
PostTest Scores:							
TABE Reading	12.9	12.9	11.3	12.9	12.9	5.2	
TABE Math							5.2
BEST							
Pre/Post Test Gains:							
Grade level gain	2	1.8	0.9	0	2	-2.3	2.3
Raw score gain							
percentage of gain	18.35%	16.22%	8.65%	0.00%	18.35%	-30.67%	79.31%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	199	200	201	202	203	204	206
Demographics:							
Ethnicity		h	w	w	w		w
No. Yrs. w/ Co.		4			2		10
Age							
Gender	f	f	f	f	f	m	m
Educ. Level		12			12		12
PreTest Scores:							
TABE Reading							
TABE Math	5.3	3.9	6.8	8.4	9.1	7	4.7
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	12.9	7.6	12.5	12.9	12.9	12.9	7.4
BEST							
Pre/Post Test Gains:							
Grade level gain	7.6	3.7	5.7	4.5	3.8	5.9	2.7
Raw score gain							
percentage of gain	143.40%	94.87%	83.82%	53.57%	41.76%	84.29%	57.45%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	208	209	210	211	212	213	214
Demographics:							
Ethnicity	w		w	b	w	b	w
No. Yrs. w/ Co.	1	2	3	3	3	8	2
Age	21	22	22	23	24	25	25
Gender	f	m	m	m	m	f	f
Educ. Level	14	12	12	12	12	12	12
PreTest Scores:							
TABE Reading							
TABE Math	12.9	5.4	8.2	5.8	7.5	5	6
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	12.9	12.9	12.5	5.9	12.9	7.2	10.9
BEST							
Pre/Post Test Gains:							
Grade level gain	0	7.5	4.3	0.1	5.4	2.2	4.9
Raw score gain							
percentage of gain	0.00%	138.89%	52.44%	1.72%	72.00%	44.00%	81.67%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	216	217	218	219	220	221	222
Demographics:							
Ethnicity	h	b	w	w	w	w	w
No. Yrs. w/ Co.	4.5	6	4	0.5	0.25	3	1
Age	26	27	27	27	29	29	29
Gender	m	m	m	m	f	f	m
Educ. Level	13	12	13	14	12	12	
PreTest Scores:							
TABE Reading							
TABE Math	5.8	7.6	12.9	10.9	6.9	5.8	12.9
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	9	11.5	12.9	12.9	12.9	12.9	12.9
BEST							
Pre/Post Test Gains:							
Grade level gain	3.2	3.9	0	2	6	7.1	0
Raw score gain							
percentage of gain	55.17%	51.32%	0.00%	18.35%	86.96%	122.41%	0.00%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	223	224	225	226	227	228	229
Demographics:							
Ethnicity	w	b	w	w	w	w	w
No. Yrs. w/ Co.	2	12	1	3	13	0.25	5
Age	29	30	30	32	32	32	32
Gender	m	f	m	f	f	f	m
Educ. Level	12	12	13	11	12	14	13
PreTest Scores:							
TABE Reading							
TABE Math	8.4	6.8	6.3	7.2	7.5	8.1	4.7
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	12.9	9.7	8.1	7.1	9.7	12.9	4.8
BEST							
Pre/Post Test Gains:							
Grade level gain	4.5	2.9	1.8	-0.1	2.2	4.8	0.1
Raw score gain							
percentage of gain	53.57%	42.65%	28.57%	-1.39%	29.33%	59.26%	2.13%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	**230**	**231**	**232**	**233**	**234**	**235**	**236**
Demographics:							
Ethnicity	w	w	h	b	w	w	w
No. Yrs. w/ Co.	0.25	5	0.5	4	1	13	2.5
Age	33	33	33	34	34	34	34
Gender	f	f	m.	f	f	f	m
Educ. Level	4	12	13	12	12	13	14
PreTest Scores:							
TABE Reading							
TABE Math	7.9	4.8	9	5.8	8.4	4.5	5.8
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	12.9	12.9	12.9	12.5	12.9	8.6	8.6
BEST							
Pre/Post Test Gains:							
Grade level gain	5	8.1	3.9	6.7	4.5	4.1	2.8
Raw score gain							
percentage of gain	63.29%	168.75%	43.33%	115.52%	53.57%	91.11%	48.28%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							

OAI Pre- and Post-Test
Data Analysis

Participants:	**237**	**238**	**239**	**240**	**241**	**242**	**243**
Demographics:							
Ethnicity	w	h	w	w	b	w	w
No. Yrs. w/ Co.	4	16	3	5	15	3	9
Age	35	35	36	36	36	37	37
Gender	f	m	f	f	m	f	f
Educ. Level	12	12	12	14	12	12	12
PreTest Scores:							
TABE Reading							
TABE Math	5.2	6.3	6.3	7.8	7.6	5.1	7.8
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	12.9	12.9	12.5	12.9	12.9	12.9	12.9
BEST							
Pre/Post Test Gains:							
Grade level gain	7.7	6.6	6.2	5.1	5.3	7.8	5.1
Raw score gain							
percentage of gain	148.08%	104.76%	98.41%	65.38%	69.74%	152.94%	65.38%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company							Parkview

OAI Pre- and Post-Test
Data Analysis

Participants:	244	245	246	247	248	249	250
Demographics:							
Ethnicity		w	w	w	w	b	h
No. Yrs. w/ Co.	5	0.5	2.5	21	2.5	2	3
Age	38	38	40	40	43	43	46
Gender	m	m	f	m	f	m	f
Educ. Level	13	14	12	12	12	12	12
PreTest Scores:							
TABE Reading							
TABE Math	6.5	6.6	7.7	6	7.2	4.1	5.6
BEST							
PostTest Scores:							
TABE Reading							
TABE Math	12.9	12.9	8.3	10.9	12.9	5.9	9.7
BEST							
Pre/Post Test Gains:							
Grade level gain	6.4	6.3	0.6	4.9	5.7	1.8	4.1
Raw score gain							
percentage of gain	98.46%	95.45%	7.79%	81.67%	79.17%	43.90%	73.21%
Company							

Participants:							
Demographics:							
Ethnicity							
No. Yrs. w/ Co.							
Age							
Gender							
Educ. Level							
PreTest Scores:							
TABE Reading							
TABE Math							
BEST							
PostTest Scores:							
TABE Reading							
TABE Math							
BEST							
Pre/Post Test Gains:							
Grade level gain							
Raw score gain							
percentage of gain							
Company	Metal Products						

OAI Pre- and Post-Test
Data Analysis

Participants:	**251**	**252**	**253**	**254**	**255**	**256**
Demographics:						
Ethnicity	w	w	b	w	w	w
No. Yrs. w/ Co.	6	27.5	13	1	5	16
Age	48	48	50	52	55	57
Gender	f	m	f	m	f	m
Educ. Level	12	12	14	12	12	8
PreTest Scores:						
TABE Reading						
TABE Math	7.3	12.9	7.7	10.6	6	2.3
BEST						
PostTest Scores:						
TABE Reading						
TABE Math	12.9	12.9	12.9	12.9	12.9	6.5
BEST						
Pre/Post Test Gains:						
Grade level gain	5.6	0	5.2	2.3	6.9	4.2
Raw score gain						
percentage of gain	76.71%	0.00%	67.53%	21.70%	115.00%	182.61%
Company						

Participants:						
Demographics:						
Ethnicity						
No. Yrs. w/ Co.						
Age						
Gender						
Educ. Level						
PreTest Scores:						
TABE Reading						
TABE Math						
BEST						
PostTest Scores:						
TABE Reading						
TABE Math						
BEST						
Pre/Post Test Gains:						
Grade level gain						
Raw score gain						
percentage of gain						
Company						

OAI Pre- and Post-Test
Data Analysis

Participants:				
Demographics:	Asian	Black	Hispanic	White
Ethnicity	4.23%	9.12%	32.25%	54.40%
No. Yrs. w/ Co.	Av.No.Yrs. w/Co.		6.54412969	
Age	Av.Age		37.0692042	
Gender	35.50%	female	64.50%	male
Educ. Level	Educ.Level in yrs.		10.390411	
PreTest Scores:	averages	medians	modes	
TABE Reading	9.6016393	9.6	10.9	
TABE Math	6.6580247	6.5	6	
BEST	31.95122	27	14	
PostTest Scores:	averages	medians	modes	
TABE Reading	10.727869	5.6	12.9	
TABE Math	10.166049	10.6	12.9	
BEST	40.585366	39	51	
Pre/Post Test Gains:	averages	TABE-Rdg.	TABE-Math	BEST
Grade level gain	2.8565022	1.12622951	3.50802469	8.63414634
Raw score gain	8.6341463			
percentage of gain	53.23%	11.73%	52.69%	27.02%
Company				
Participants:				
Demographics:				
Ethnicity				
No. Yrs. w/ Co.				
Age				
Gender				
Educ. Level				
PreTest Scores:				
TABE Reading				
TABE Math				
BEST				
PostTest Scores:				
TABE Reading				
TABE Math				
BEST				
Pre/Post Test Gains:				
Grade level gain				
Raw score gain				
percentage of gain				
Company				

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